REPUBLIC OF KENYA

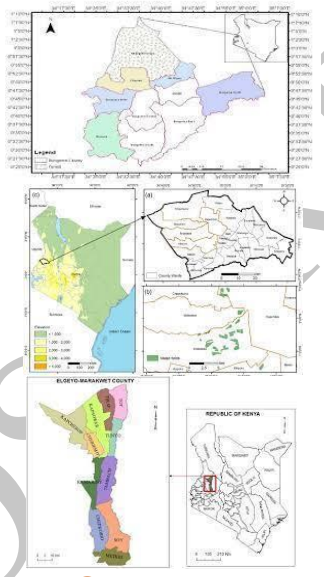
Ministry of Lands, Public Works, Housing and Urban Development.

State Department for Housing and Urban Development.

SECOND KENYA INFORMAL SETTLEMENTS IMPROVEMENT PROJECT (KISIP 2)

CONSULTANCY SERVICES FOR INFRASTRUCTURE UPGRADING PLANS, DETAILED ENGINEERING DESIGNS AND PREPARATION OF PROCUREMENT DOCUMENTS AND CONSTRUCTION SUPERVISION OF INFRASTRUCTURE IMPROVEMENT WORKS IN CHEBIEMIT INFORMAL SETTLEMENTS IN THE ELGEYO MARAKWET COUNTY.

CONTRACT NO.: KE-MOTI-298203-CS-QCBS



COMPREHENSIVE ENVIRONMENTAL IMPACT ASSESSMENT REPORT (CPR) FOR CHEBIEMIT SETTLEMENT ELGEYO MARAKWET COUNTY

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PREPARATION, REVIEW AND AUTHORISATION

Revision #	Date	Prepared by	Reviewed by	Approved for Issue by
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FEBRUARY 2024

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ACRONYMS

AFD	Agence Française de Développement
AQ	Air Quality
BOQ	Bills of Quantities
CBO	Community-based Organization
CEMP	Community Environmental Management Plan
CPCT	County Project Coordination Team
CR	Consultant Representative
CPR	Comprehensive Project Report
EA	Enumeration Areas
ECG/ CGE	Elgeyo-Marakwet County Government/ County Government of Elgeyo-Marakwet
EHSG	Environment Health and Safety Guidelines
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESF	Environment and Social Framework
EIA	Environmental Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environment and Social Management Plan
FBO	Faith-based Organization
FGD	Focus Group Discussion

GoK	Government of Kenya
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
IDA	International Development Association – World Bank
KeNHA	Kenya National Highways Authority
KISIP	Kenya Informal Settlements Improvement Project
KNBS	Kenya National Bureau of Statistics
KURA	Kenya Urban Roads Authority
KWFT	Kenya Women's Finance Trust
MLP WHUD	Ministry of Lands, Public Works, Housing and Urban Development
MM	Man Month
NACHU	National Cooperative Housing Union
NEMA	National Environmental Management Authority
NG-CDF	National Government Constituencies Development Fund
NPCT	National Project Coordination Team
OHS	Occupational Health and Safety
PAD	Project Appraisal Document
PAP	Project Affected Persons
PDO	Project Development Objective
PDP	Part Development Plan

PFM	Public Financial Management
POM	Project Operations Manual
PPSD	Project Procurement Strategy for Development
QA	Quality Assurance
QAP	Quality Assurance Plan
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SAL	Sobocon Associates Limited
SDHUD	State Department of Housing and Urban Development
SDTM	Social Tenure Domain Model
SEC	Settlement Executive Committee
SEF	Stakeholder Engagement Framework
SEP	Stakeholder Engagement Plan
SPA	Special Planning Area
SRS	Simple random sampling
SUP	Settlement Upgrading Plan
TCG/ CGT	TransNzoia County Government/ County Government of TransNzoia
TL	Team Leader
ToR	Terms of Reference

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EXECUTIVE SUMMARY

Introduction

The Government of Kenya has received Credit facility from the International Development Association (IDA) and AFD towards the cost of the Second Kenya Informal Settlements Improvement Project (KISIP II) which entails Construction of Infrastructure Works in Selected Informal Settlements in the Counties of **Bungoma, Elgeyo Marakwet and Transzoia (9No. Settlements).** The overall objective of KISIP II is to improve access to basic services and tenure security of residents in participating urban informal settlements and strengthen institutional capacity for slum upgrading in Kenya and it supports the Governments' affordable housing agenda as it seeks to complement the demand-side and supply-side operations to improve housing affordability at the proposed project locations in Chebiemit in Elgeyo Marakwet. This report presents the findings of Chebiemit.

This Environment and Social Impact Assessment is therefore being undertaken in line with section VI of the Environmental Management and Coordination Act 1999 which requires all projects to be subjected to EIA before implementation. This is done in line with the Environmental Impact Assessment Regulations 2019 under the Act.

EIA Objective

The main objective of this study is to objectively assess and evaluate environmental and social impacts that may arise as a consequence of implementing the project at the proposed project sites.

Project Scope

The proposed projects include:

Table 1: Project Scope

Elgeyo Marakwet	**Chebiemit Settlement**	
	Roads /footpath	*Construction of 1461m of roads*
	Stormwater Drainage	*Construction of 1461m of Storm water Drainage Network*
	Public lighting	*Construction of 25Nr Street light and 1Nr. High mast flood light*

Scope of work

The scope of the Environmental Impact assessment included baseline environmental assessment of air, noise and water quality along the proposed project sites, literature review, public and stakeholders consultations, review of the relevant regulatory requirements applicable to the projects at hand, impact identification, impact analysis, preparation of the environmental management plan and monitoring plans.

Baseline Monitoring

This report presents the findings of the baseline assessments undertaken along the project areas. The air quality assessment indicated that the VOCs levels were low with the maximum being 63.50 µg/m^3 against the Kenyan limit of 600 µg/m^3. SOx levels were all above WHO guidelines. Limits that exceeded the local guideline were at St. Barnabas school and around the Chebiemit Hospital. The highest level was 268.47 µg/m^3. NOx levels were within the regulatory limits for both local and WHO guidelines. Detailed results are captured in section five of this report and the appendices.

The baseline noise results indicated that the obtained levels are within set limits for both the local and WHO with the highest LAeq(dBA) being 54.5 dBA against the local and WHO limit of 60dBA and 70dBA respectively. The Detailed results are captured in section five of this report and the appendices.

The water quality results sampled from Chebiemit River indicated that all parameters monitored were within the set regulatory limits apart Nitrates and phenols recorded high values. The detailed report is herein appended.

Environmental impacts that emanated from the study included:

Positive Impacts

1. Improved road network and drainage system.
2. Improved security because of the installation of security lights on walkways.
3. Employment creation for locals mostly youths and women.
4. Market for locally available construction materials.
5. Attraction of investors due increased security and accessibility.

6. Increased business due to long operation hours.
7. Reduced drugs and substance abuse by youths because they will be fully engaged.
8. Improved living standards
9. Access to safe and clean water for domestic use.
10. Improved sanitation standards.

Negative Impacts

- Air Pollution from dust
- Flooding of storm water due to blocked drainage channels
- Destruction of water pipes or disruption of water supply, sewer and power lines
- Vegetation loss
- Solid waste generation
- Potential impact on traffic/ obstruction of temporary access
- Surface water run-off
- Safety Risks
- River water contamination
- Noise and vibration
- Displacement Impacts
- Incidence of HIV/AIDS
- Soil loss and soil pollution
- Visual impacts
- Accidental spills & leakages
- Occupational Health and
- Requirement and use of construction materials
- Sustainability and Climate Change Impacts

Stakeholder Consultations

Based on the site inspection, analysis, assessment and the views of the key stakeholders and the community consulted, it is evident that the construction and operation of the proposed projects will in overall be beneficial to locals as it will improve their environment. The anticipated negative impacts will be mitigated as per the best practice. The mitigations are addressed in the environmental management plan during all phases of the project.

The measures for mitigating identified potential adverse impacts have been provided in Section 9 of this report. They will include air, soil, water, waste and waste management measures and management Plans. The plans to be formulated are;

- Construction management plan
- Workplace health and safety plan
- Labour and Human Resource Management Plan
- Community safety plan
- Emergency management and response plan
- Rehabilitation and closure management plan

The proposed plans will be subjected to monitoring. Monitoring will have two elements: routine monitoring against standards or performance criteria; and periodic review or evaluation. Monitoring will often focus on the effectiveness and impact of the plans.

Conclusion and Recommendations

The implementation of the proposed project will generate both positive and negative impacts. This report presents appropriate mitigation measures based on the findings and particularly the opinions expressed by key stakeholders as well as the community during community engagements. A comprehensive environmental management plan against identified potential adverse impacts is presented in Chapter Nine (9) of this report and will see the negative impacts further decrease significantly. The study further concluded that the project will be of immense benefit to the community as a whole.

On the basis of the conclusion above, we recommend that the proponent be allowed to proceed with the proposed identified projects and in addition the proponent should comply with the approved designs and implement ESMP developed by the consultant. The mitigation measures proposed in this report should be included in the tender contract and tender documents so that the contractor who will be selected for the project will be bound to implement them.

1. PROJECT OVERVIEW

1.1 Introduction and Project Background

The Government of Kenya has received Credit facility from the International Development Association (IDA) and AFD towards the cost of the Second Kenya Informal Settlements Improvement Project (KISIP II) which entails Construction of Infrastructure Works in Selected Informal Settlements in the Counties of **Bungoma, Elgeyo Marakwet and Transzoia (9No. Settlements).** The overall objective of KISIP II is to improve access to basic services and tenure security of residents in participating urban informal settlements and strengthen institutional capacity for slum upgrading in Kenya.

This Project, while concentrating on informal settlements, complements existing and past Urban operations in Kenya which address the Urban infrastructure deficit and Urban institutional challenges. It supports the Governments' affordable housing agenda as it seeks to complement the demand-side and supply-side operations to improve housing affordability.

This Environment and Social Impact Assessment is therefore being undertaken in line with section VI of the Environmental Management and Coordination Act 1999 which requires all projects to be subjected to EIA before implementation. This is done in line with the Environmental Impact Assessment Regulations 2019 under the Act.

For this reason, the state department of housing and urban development in the Elgeyo Marakwet County Government herein referred to as the proponent commissioned this Environmental Impact Assessment study for the proposed projects located in Chebiemit Settlement within Elgeyo Marakwet County.

1.2 Study Objective

The main objective of this study is to objectively assess and evaluate environmental and social impacts that may arise as a consequence of implementing the project based on the engineering design. The specific objectives are to:

1. To fulfill the legal requirements as outlined in Environmental Management and Coordination Act, EMCA 1999 (Amended 2015) and the Integrated Environmental (Impact Assessment and Audit) EIA/EA Regulations 2019;
2. To obtain background biophysical information of the site and legal and regulatory issues

associated with the Project;

3. To assess and predict the potential environmental and social impacts during site preparation, construction and operational phases of the Project;
4. To make suggestions of possible alterations to the proposed design, based on the assessment findings;
5. To propose mitigation measures for the potential significant adverse environmental impacts and safety risks;
6. To prepare an Environmental and Social Management Plan (ESMP);
7. Submit the EIA report to NEMA for licensing.

1.3 EIA Screening

Screening was undertaken to both Environment and Social aspects and it was concluded that according to the World Bank guidelines and Kenyan EIA/EA Regulations 2003 (amended 2019), the subproject can be classified as Moderate Risk and Medium Risk, respectively and will require Comprehensive study and reporting. The detailed screening checklist is presented in Annex VI and VIII of this report.

1.4 KISIP Project Components

The project has the following four components:

Component 1: Integrated Settlement Upgrading. This component supports settlement upgrading through two main interventions classified under two sub-components:

Sub-component 1.1: Infrastructure Upgrading

Coordinates infrastructure investment portfolio whose menu includes: roads, bicycle paths, pedestrian walkways, street and security lighting, vending platforms, solid waste collection and settlement sorting, storm water drainage, water and sanitation systems, public parks, and green spaces. It further includes investments related to prevention of crime and violence, including but not limited to community centers.

Component 2: Socio-Economic Inclusion Planning

This component supports community development plans to enhance social and economic inclusion, identifies beneficiaries who fit the eligibility criteria of government programs but are

excluded and connects them appropriately, supports participatory crime and violence mapping, monitors the employment of local labor, carries out community capacity building and awareness raising for various project interventions including community-based solid waste management.

Component 3: Institutional Capacity Development for Slum Upgrading

This component supports institutional and policy development at national and county levels; develops a capacity building plan for national and county levels to implement the Strategy and to develop understanding of slum upgrading processes; also supports technical assistance, training, workshops and learning events, experience sharing and peer-learning activities with other counties, and other capacity building activities**.**

Component 4: Program Management and Coordination

This component supports activities of the NPCT and the CPCTs related to national and county-level project management and coordination, including planning, surveying, engineering, fiduciary (financial management and procurement), safeguards compliance and monitoring, monitoring and evaluation (M&E), communication and community development.

1.5 Land Ownership

The study settlements are organized as per the relevant RIMs, which has been largely discussed in previous project reports.

2. PROJECT DESCRIPTION

2.1 Project location

Chebiemit is in Elgeyo Marakwet County, Marakwet West Constituency, which has a cross junction whose roads connects four major areas (Eldoret, Kapsowar, Kapcherop and Mathira).

Elgeyo Marakwet County covers an area of 3,032 Km^2 and is located in the Rift Valley region of Kenya. It borders the counties of West Pokot to the north, Baringo County to the east, southeast and south, Uasin Gishu to the southwest and west, and Trans Nzoia to the northwest. Its geographical coordinates are 1.0498° N, 35.4782° E and located at an altitude of 2804.22m above sea level experiencing mean temperatures of 20.47 degrees centigrade. It has a population of 454,480 as per the 2019 national population census.

Figure 1: Map of Elgeyo Marakwet County

The proposed sub projects are located within Chebiemit settlement in Chebiemit Town, Elgeyo Marakwet County located along coordinates latitude 0.8569817N and Longitude 35.4900031E with an elevation of 1169m. The settlement is mainly accessed through Iten-Kapsowar Road. The town has an estimated area of 10 Ha with a population of about 323 people. Figure 2 below presents the proposed project location areas.

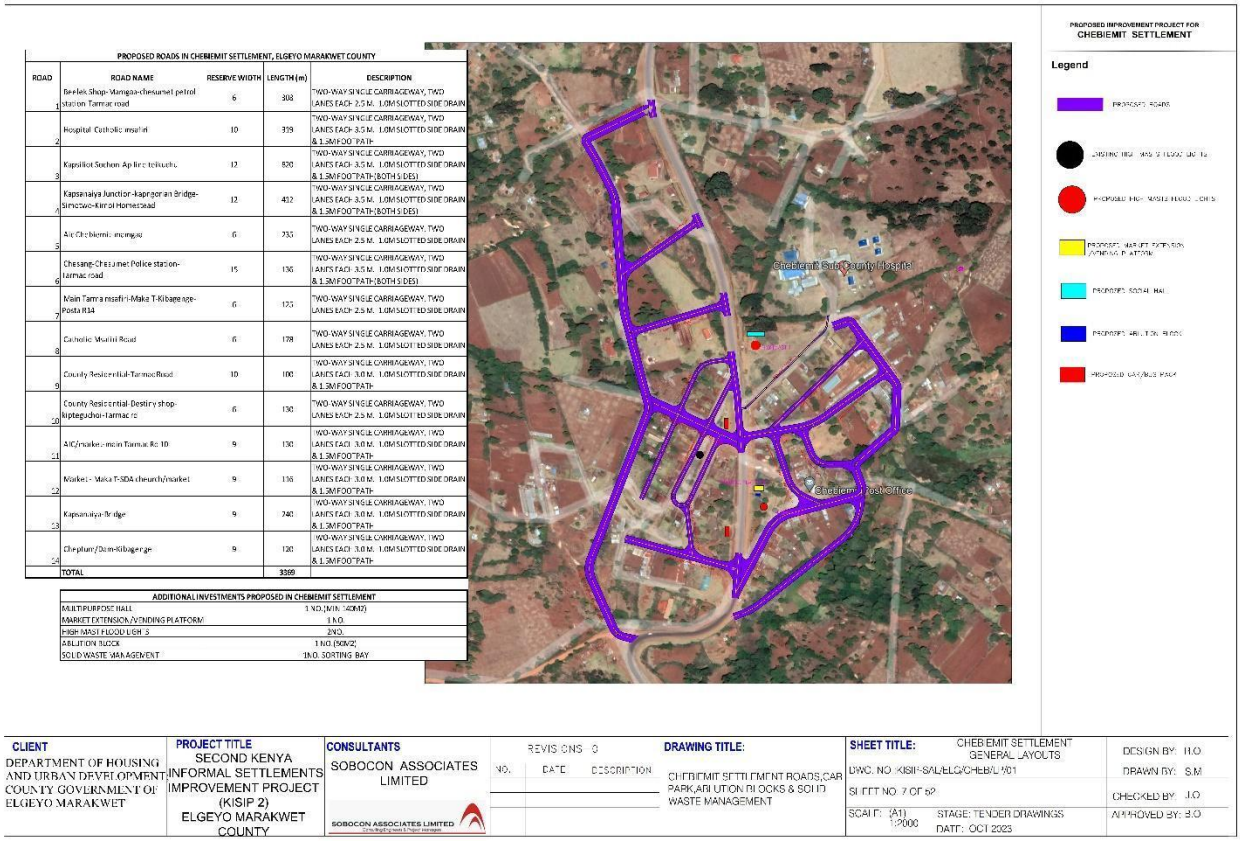


Figure 2: Chebiemit project areas map

2.2 Project Details

The proposed project and its components comprise of construction of 1461m internal roads with 6-14m reserve width and storm drainage system running along the roads. The project will also include construction of 25 streetlights and 1 high mast flood lights to improve security in the area. Table 2 below summarizes the proposed project details in Chebiemit Settlement.

Table 2: Chebiemit project details

Chebiemit Settlement	
Roads /footpath	*Construction of 1461m of roads* *I. Beelek Shop-Mamgaa-chesumet petrol station-Tarmac road-315m* *II. Hospital-Catholic-msafiri-324m* *III. Kapsiliot Sochon-Ap line teikuchu-822m*
Stormwater Drainage	*Construction of 1461m of Storm water Drainage Network*

Public lighting	*Construction of 25Nr Street light and 1Nr. High mast flood light*

The project will upgrade the infrastructure and sanitation situation in the informal settlements, hence helping the GoK in fulfilment on the constitutional required of providing healthy and clean environment to the residence. During the initial construction phases, the project is likely to cause limited negative environmental and social impacts that are more localized in the project area with the implementation within the scope of planning/and can be mitigated.

With the above details, the project falls under the second schedule of EMCA Cap. 387 (amended in 2019). According to the Kenyan EIA/EA Regulations 2003 (amended 2019), the subproject can be classified as Medium Risk and will be required to undergo a Comprehensive EIA Study and Reporting (CPR).

The project will also trigger World Bank Safeguard policies OP 4.01 and OP 4.12 and would be classified as a Moderate Risk Project.

2.3 Proposed Project areas

The scope of services for this assignment is limited to the selected informal settlements as per the Table 3 below:

Table 3: List of Selected Informal Settlements

County	Settlements	Population (As per TOR)	Actual population	Area (As per TOR) (Ha)	Measured Area (Ha)
Elgeyo Marakwet	Chebiemit	323	27180	10	52.91
	Cheptongei	874	2032	11.5	28.2

2.4 Project Design

A detailed project design report has been prepared by the design team. The designs have incorporated environmental considerations.

2.5 Project justification

The proposed project development objective is to improve access to basic services and tenure security of residents in participating urban informal settlements and strengthen institutional capacity for slum upgrading in Kenya.

Under KISIP II, most of the infrastructure will contribute to climate resilience and the project will have substantial climate change adaptation and mitigation co-benefits. It is expected that KISIP II funds will be similarly allocated ensuring that most of the financing for infrastructure will be towards climate resilient infrastructure. Additionally, counties who benefitted from high-mast lighting have requested for energy efficient options in KISIP II as the cost of keeping the lights on has been high. KISIP II will implement energy efficient options in lighting. Some of the project benefits are:

a) Benefits of investments in urban roads

The benefits associated with improved roads are (a) travel time savings; (b) travel cost savings; (c) reductions in vehicle operating costs; (c) enhanced access to jobs, markets, health facilities, schools, and other services at lower cost than otherwise available (reflected in enhanced land values); and (d) promotion of economic growth in the region through enhanced trade, increased efficiency, and higher productivity. The economic rate of return for urban roads under various World Bank-supported projects in Africa ranged from 18 to 33 percent.

b) Benefits of drainage systems

Benefits include (a) reduced number of days of work lost due to flooding; (b) reduced property damage (buildings, roads, furniture, appliances, household goods); (c) increased property values; (d) reduced loss of income from businesses whose hours are curtailed and access reduced; (e) improved travel times on streets that used to flood; (f) lower maintenance costs for vehicles; and (g) reduced costs of illness associated with exposure to polluted and stagnant water. Analysis done for the Kenya Municipal Program showed that investments in a drainage system that considered only a reduced number of days lost from work generated an internal rate of return of 32 percent.

c) Benefits of investments in street lighting

Benefits of street lighting include (a) increased perception of safety, (b) reduced accidents, and (c) and increased ability to do business after dark. People interviewed for the beneficiary analysis of KISIP I noted that they felt a greater sense of security at night and were now walking along streets with lights, rather than taking motorized transport to their destinations. Some participants pointed out that accidents between vehicles and between vehicles and pedestrians had declined. Some mentioned that business hours had expanded and that the appearance and liveability of the urban center had improved.

d) Benefits of tenure security.

Benefits of tenure security include (a) increased investments in housing and businesses, (b) increased labour-force participation, and (c) improved health due to reduced stress from fear of displacement and expropriation. People interviewed for the beneficiary analysis of KISIP I noted that they felt much reduced stress and were planning to invest in their properties.

2.6 Project Cost

The estimated cost for the Elgeyo Marakwet projects **is KES. 175,276,758**. The project cost summary/the bill of quantities is attached as Annex III. Pursuant to regulation 48 of the Environmental (Impact Assessment and Audit) Regulations, 2003, as read with paragraph 4 of the fifth schedule thereof. It is notified to the public that the Cabinet Secretary for Environment, Water and Natural Resources has reviewed the Environmental Impact Assessment fees payable as follows:0.1% of the total cost of the project to a minimum of KSh.10,000 with no upper capping, as per GAZETTE NOTICE NO. 13211.

2.7 Land Use

The study areas are majorly residential with a small mix of commercial use. The structures in the settlement are diverse ranging from mud housing to masonry permanent housing, a few are storey buildings. The settlements have been adjudicated, and land ownership is not an issue. Small and medium-sized businesses are located throughout the settlements, with residents providing labour for both formal and informal businesses such as industries, small medium enterprises, agricultural activities, and Jua kali sector activities.

2.8 EIA Scope

Scoping was undertaken and established that the EIA study will include the following:

1. Baseline Environmental Assessment
    a. Air quality assessment (PM_{10}, $PM_{2.5}$, SO_2, NO_2)
    b. Environmental noise assessment
    c. Water quality assessment
2. Literature Review
3. Site visit/inspection
4. Public and Stakeholder consultations
    a. Key Stakeholders consultations
    b. Public Consultations

3. ANALYSIS OF PROJECT ALTERNATIVES

3.1 Settlement selection

Environment and social impacts are minimized as a direct consequence of the settlement selection methodology adopted by the project. This includes:

Land tenure status: a settlement must be located on land that is owned by the government or on land with clear ownership status.

Location: a settlement cannot be located on a hazardous site or in an environmentally fragile area.

Settlement size and density: larger and denser settlements will receive priority to ensure that as many people as possible benefit from the investments.

Scale of potential displacement of residents: physical upgrading of the settlement should not entail large-scale displacement (and, thereby, relocation) of residents.

Proximity to trunk infrastructure: to maximize settlement coverage within a limited budget and to ensure that participating settlements receive connections to citywide infrastructure networks and maintenance systems, in the initial years of project implementation settlements that are in close proximity to core trunk infrastructure (such as roads and trunk lines for water, sewage or electricity) will receive priority.

Sustainability of the proposed rehabilitation is ensured through community's willingness to participate and remain engaged in the program

Need to eliminate economic differentials: KISIP is by design biased towards support to informal settlements. The motivating criteria is to improve quality of life in informal settlements towards building equality and attaining both local and globally accepted standards for quality of life. Given this consideration, KISIP also targeted settlements where residents are most disadvantaged.

Compliance with Kenyan law: At Municipality level, the choice was between informal settlements whereby decision was informed by a couple of criteria the most overriding of which is compliance to national law and the need to insure against adverse social and environmental impacts as secured by WB Safeguard Policies. In this respect, informal settlements that exist contrary to Kenyan law such as those occurring in riparian areas, wetlands, etc were avoided as these would call for entire relocation rather than upgrading.

3.2 Choice between conflicting needs

Harmony with local planning priorities: Municipal Authorities are charged with directing and shaping development within areas of jurisdiction in line with the Physical Planning Act. Thus, based on the Part Development Plans, LA prioritizes interventions based on the perceived development needs, for example, the need to provide roads to open up areas for residential development, or to attract higher quality housing development, etc. Need to address community

felt needs: In the case of KISIP, identification of investments was also a reflection of the community felt needs whereby selection of investments was guided by given principles namely:

- The service should be selected from the agreed investment menu.
- The investment should be a priority specified in the physical upgrading plan developed by the residents of the informal settlement through a participatory process.
- The chosen infrastructure investments should be economically justifiable
- Arrangements for operations and maintenance must be sound and give confidence that service delivery will be sustainable.
- Environmental and social impacts of infrastructure investments are positive.
- Budget and per hectare cost must be within agreed limits

3.3 Choice between technologies

Choice of technology is normally an engineering decision informed by consideration of site conditions, availability of appropriate materials, labour versus capital intensive policy, budgetary provisions, requirements for Operation and Maintenance etc. Investments proposed for KISIP are still at an identification stage in which case, decisions regarding the choice of technology are yet to be made. However, at the EIA stage, the choice of the entire design will be subjected to review to ensure that the selected technology offers a combination of technical feasibility, economic viability and socially acceptability.

4. EIA METHODOLOGY

This study involved a combination of quantitative and qualitative research approaches. **Quantitative methods** will be used to establish metrics of the established indicators and generate numerical data. A statistical sample will be used to conduct the quantitative research. This will be achieved by asking closed-ended questions to the target respondents. On the other hand, **qualitative methods** will be used to explore and understand people's views, experiences, and attitudes with respect to this project. This will be achieved by asking open-ended questions to the target respondents.

4.1 Data Collection

4.1.1 Literature review

Review of literature was done to obtain all relevant information pertaining to the project. The documents that will be reviews include the following:

5. The project Environmental and Social Management Framework (ESMF)
6. Grievance Redress Mechanism (GRM)
7. Stakeholder Engagement Framework (SEF)
8. Vulnerable and Marginalized Groups Framework
9. All relevant policies, regulations and guidelines
10. Relevant and related EIA project and monitoring reports
11. World Bank Safeguards

Literature review formed the source of data in this assignment. It will involve desk review and analysis of ESMF, ESMP, SMP, GRM, and PMP reports to identify gaps, policies, legislations and institutional frameworks relevant to this project, and existing project documentation pertinent to the assignment as will be availed.

4.1.2 Baseline Monitoring

Baseline monitoring will be undertaken on air, noise and soil to establish the conditions before the inception of the project. Samples will be collected along all the project areas.

4.2 Key stakeholder's consultations

One on one interviews with key stakeholders within the project area will be undertaken to assist in analysis of existing and anticipated impacts of the project to the community within the project area. The interviews will focus on getting information from key stakeholders within the project area. The identified key stakeholders to be consulted includes the following:

1. National Environmental Management Authority (NEMA)
2. Ministry of Environment and Natural Resources
3. Ministry of Lands, Housing, and Infrastructure Development (MoLHID)
4. Kenya forestry Service (KFS)
5. Ministry of Water and Sanitation
6. Settlement Committee Members (SEC)

4.3 Public Meetings/ Barazas

Community consultations and sensitization was undertaken to provide the project area community and key stakeholders with an opportunity to directly interact with the project proponent through the EIA Consultants and ask questions, raise issues and concerns pertaining to the proposed project and contribute to the identification of project impacts, mitigation measures and project alternatives.

4.4 Household Surveys

Household surveys were undertaken to establish the socio-economic status of the community living within the project interest areas. This was done using Household Survey questionnaires.

4.5 Abbreviated Resettlement Action Plan (A-RAP)

An abbreviated Resettlement Action Plan has been prepared in compliance with the Government's National Policy on Involuntary Resettlement, World Bank's Operational Policy (OP) 4.12 on Involuntary Resettlement and the project's social management framework (SMF). Complete A-RAP report has been prepared and presented in Annex VI of this report.

5. BASELINE ENVIRONMENTAL CONDITIONS

5.1 Overview

The proposed projects in Elgeyo Marakwet County are located at Chebiemit in Elgeyo Marakwet County and thus the environmental conditions for these project areas will assume those of Iten town. Iten is a town in Elgeyo-Marakwet County and serves as the capital and is the largest town in the County. The biophysical environment for the proposed project locations are presented below:

5.2 Physical Environment

5.2.1. Climate

Iten's climate is classified as warm and temperate. The precipitation levels in the city of Iten are noteworthy, as there is a considerable amount of rainfall even during months that typically experience dry weather. Köppen and Geiger classify this climate as Cfb. In Iten, the mean yearly temperature amounts to 18.8 °C | 65.8 °F. The annual rainfall is 1469 mm | 57.8 inches.

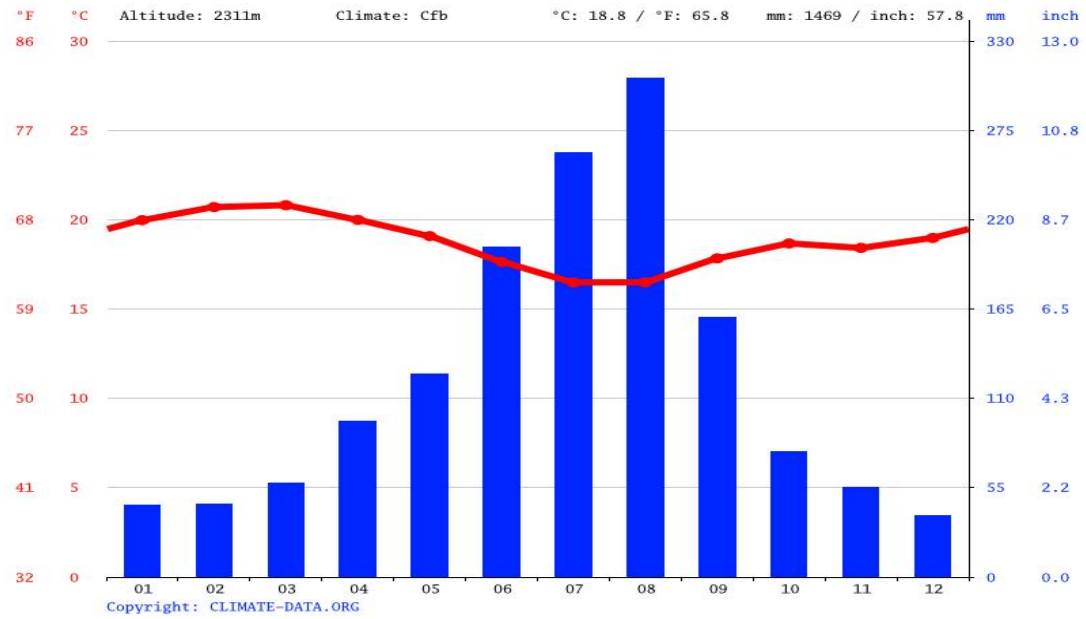


Figure 3: Iten Climate weather by month

The least amount of rainfall occurs in December. The average in this month is 38 mm | 1.5 inch. On average, the highest amount of rainfall occurs during August with a mean value of 307 mm | 12.1 inch.

AVERAGE TEMPERATURE BY MONTH ITEN

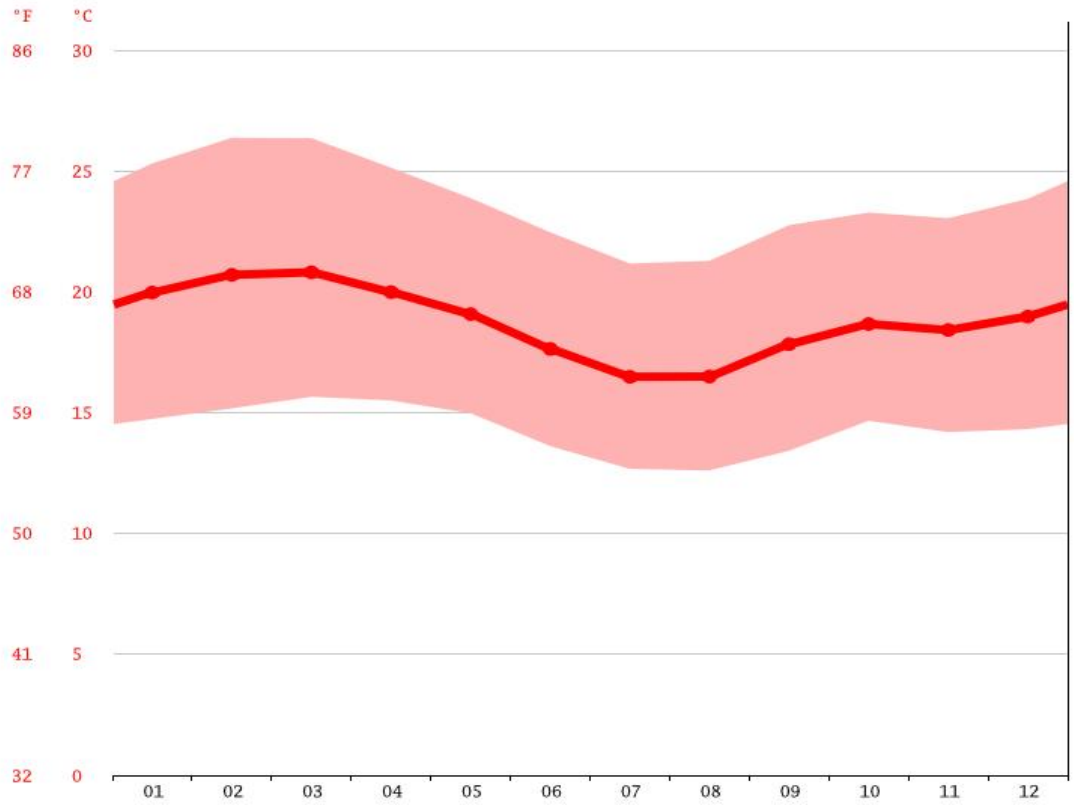


Figure 3: Iten monthly temperature data

The temperatures are highest on average in March, at around 20.8 °C | 69.5 °F. On average, the month of July is considered to be the coldest time of year with temperatures averaging at around 16.5 °C | 61.7 °F.

5.2.2. Weather by Month // Weather Averages Iten

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	20 °C (67.9) °F	20.7 °C (69.3) °F	20.8 °C (69.5) °F	20 °C (68) °F	19.1 °C (66.3) °F	17.6 °C (63.7) °F	16.5 °C (61.7) °F	16.5 °C (61.7) °F	17.8 °C (64.1) °F	18.7 °C (65.6) °F	18.4 °C (65.2) °F	19 °C (66.2) °F
Min. Temperature °C (°F)	14.7 °C (58.5) °F	15.2 °C (59.3) °F	15.7 °C (60.2) °F	15.5 °C (59.9) °F	15 °C (59) °F	13.6 °C (56.5) °F	12.7 °C (54.8) °F	12.6 °C (54.7) °F	13.4 °C (56.2) °F	14.7 °C (58.4) °F	14.2 °C (57.6) °F	14.3 °C (57.8) °F
Max. Temperature °C (°F)	25.3 °C (77.6) °F	26.4 °C (79.5) °F	26.4 °C (79.5) °F	25.1 °C (77.2) °F	23.9 °C (75) °F	22.5 °C (72.4) °F	21.2 °C (70.1) °F	21.3 °C (70.3) °F	22.8 °C (73) °F	23.3 °C (73.9) °F	23 °C (73.5) °F	23.8 °C (74.9) °F
Precipitation / Rainfall mm (in)	44 (1)	45 (1)	58 (2)	96 (3)	125 (4)	203 (7)	261 (10)	307 (12)	160 (6)	77 (3)	55 (2)	38 (1)
Humidity(%)	46%	42%	46%	58%	64%	72%	80%	81%	67%	63%	64%	55%
Rainy days (d)	3	3	4	8	9	13	19	19	10	8	8	4
avg. Sun hours (hours)	10.2	10.5	10.1	9.4	9.0	8.0	7.2	7.3	9.0	9.3	9.0	9.6

Data: 1991 - 2021 Min. Temperature °C (°F), Max. Temperature °C (°F), Precipitation / Rainfall mm (in), Humidity, Rainy days. Data: 1999 - 2019: avg. Sun hours

Figure 4: Iten rainfall data

The variation in the precipitation between the driest and wettest months is 269 mm | 11 inch. The fluctuation of temperatures across the seasons is referred to as 4.3 °C | 7.8 °F.

The month that sees the most relative humidity is August (41.69 %). The month with the lowest amount of relative humidity is February (41.69 %). The month with the highest amount of rainfall is July (24.70 days), whereas the one with the lowest precipitation level is February (4.03). [1]

[1] Iten climate: Weather Iten & temperature by month (climate-data.org)

5.3. Biophysical Environment

5.3.1. Baseline Air Quality

Air quality monitoring was undertaken to establish the baseline levels before implementation of the project. The obtained results for SO_X, NO_X, VOCs, PM and are presented below:

Table 4: Baseline Air quality results – Elgeyo Marakwet County

Description	VOCs Average (µg/m³)	SO_X Average (µg/m³)	NO_X Average (µg/m³)
St. Barnabas ACK Chebiemit	29.40	236.44	0.99
Chebiemit sub county hospital	26.60	268.47	51.83
Green area shopping center	46.40	32.33	90.47
EMCA Guidelines	**600µg/m³**	**125µg/m³**	**150µg/m³**
WHO Guidelines	**-**	**125µg/m³**	**120µg/m³**

Table 5: Baseline Particulate Matter results

Description	TSP	PM 2.5	PM 10
	Average (µg/m³)	Average (µg/m³)	Average (µg/m³)
St. Barnabas ACK Chebiemit	8.0	3.20	8.30
Chebiemit sub county hospital	8.30	4.30	7.30
Green area shopping center	6.o	5.10	8.10
EMCA Guidelines	**500µg/m³**	**75µg/m³**	**150µg/m³**
WHO Guidelines	**500µg/m³**	**75µg/m³**	**150µg/m³**

AQ Measurement at St Barnabas church Chebiemit

AQ Measurement at Green area shopping centre

	Chebiemit

Air Quality Measurement at John Bosco Sec School Cheptongie

5.4. Baseline Noise

Baseline Noise measurements were carried out along the project areas to establish the baseline status before commencement of the project. The scope of work was assessing the noise exposure levels of environmental noise along the proposed project corridors.

Noise Measurement at Green area shopping center Chebiemit

Noise Measurement at John Bosco Sec School

	Cheptongie

Noise Measurement at Cheptongie Shopping Centre

Noise Measurement at Chebiemit Sub County Hospital

Noise Measurement at St Barnabas Church Chebiemit

Various Noise measurement points along the proposed project corridors.

5.4.1. Noise Results

Table 6: Baseline Noise monitoring results

Monitoring Location	LAMax(dBA)	LAMin(dBA)	LAeq(dBA)	Noise Environment Components
St Barnabas ACK	42.9	36.7	39.84	Vehicular Movement
Chebiemit Sub- County Hospital	52.8	34.6	40.0	Vehicular Movement, Human Noise
Green area shopping Center	69.2	44.0	54.5	Vehicular Movement, Human Noise
EMCA Standards			**60**	
WB/IFC			**70**	

5.4.2. IFC/World Bank Environmental, Health, and Safety Guidelines (April 2007)

IFC Noise Management Guidelines propose that where predicted or measured noise impacts from a project exceed the applicable noise level guideline at the most sensitive point of reception, noise prevention, and mitigation measures be put in place.

The guidelines indicate that for industrial and commercial areas, noise levels should not exceed 70 dB (A). In residential, institutional, and educational areas, noise levels should not exceed 55 dB (A) during the day (07:00 to 22: 00 Hrs.) and 45 dB (A) during the night (22:00 to 07:00 Hrs.). In both cases, a maximum increase of 3 dB (A) is allowed where background noise already exceeds the guideline value. See Table 7 below;

Table 7: IFC/World Bank Noise Management Guidelines

Receptor	Maximum allowable LAeq (hourly) in dBA	
Time Frame	Day: 07:00 – 22:00 hrs	Night: 22:00 -07:00
Residential; institutional; Educational	55	45
Commercial	70	70

5.5. Baseline Water Quality

Water sample was collected at the Chebiemit River was analyzed and the results presented in Figure 6

Below:

Chemical Analysis						
PARAMETER	**Method**	**Results**	**Guide L & H**			**Ref. Std Limits (Max)**
			Low	**Opt.**	**High**	
pH*	ISO 10523	7.20				6.5-8.5
Total Suspended Solids (TSS), mg/L	APHA 2540	2.64				30
Nitrate as NO_3, mg/l	ISO 7890	14.80				10
Ammonia Nitrogen, mg/L	ISO 11732	0.24				0.5
Nitrite as NO_2 , mg/L	ISO 6777	0.04				3
Total Dissolved Solids (TDS), mg/l	APHA 2540 C	65.74				1200
Phenol, mg/L	APHA 5530	0.25				Nil
Fluoride as F, mg/L	APHA 4500 F	1.31				1.5
E.coli cfu per 100ml	ISO 9308-1	Nil				Nil
Lead as Pb, in mg/L	ISO 8288	<0.001				0.05
Arsenic as As, mg/L	ISO 8288	<0.001				0.01
Cadmium as Cd^{2+}, mg/L	ISO 8288	<0.001				0.01
Selenium as Se, mg/L	ISO 17379	<0.001				0.01
Copper as Cu, in mg/L	ISO 8288	0.051				1
Zinc as Zn, in mg/L	ISO 8288	<0.001				5
Permanganate Value (PV) mg/L	ISO 8467	<0.001				1
Alkyl Benzyl Sulphonates mg/L	ASTM D4711	<0.001				0.5
Total coliform, cfu/100ml	ISO 9308-1	20				X^2
Free Residual Chlorine	LWTP 012	0.05				X^2
Chloroform	LWTP 037	Not Detectable				X^2
********End of test results********						

Figure 5: Chebiemit River water quality results

The detailed water quality results are presented in Annex I(a) of this report

5.6. Baseline Environmental Observations

5.6.1. Chebiemit Settlement

5.6.1.1. Sources of water

The main source of water is Chebiemit River across the settlement acting as source of clean water to the surrounding.

Figure 6: Chebiemit River

Figure 7: Piped water in Chebiemit settlement

5.6.1.2. Solid waste handling.

During the site visit it was noted that the residents had no dumpsite for disposal of solid waste. They just have a collection center where solid wastes are disposed of waiting for transportation to the dumpsite. This collection point causes serious environmental pollution as illustrated below.

SOLID WASTE

Poor waste management in Chebiemit settlement

Pit latrine now converted to solid wastes dumping site

Burning of solid waste at households.

5.6.1.3. Sanitary Waste

There is no sewer system in Chebiemit settlement hence most residents depend on pit latrines for their sanitary waste disposal. These pits sometimes get filled up and overflow into the environment.

Figure 8: Existing sanitary facility used by residents

5.6.1.4. Vegetation cover

The settlement is surrounded by a good tree cover comprising of various trees namely; cider, podo, Cyprus, gravellier, Nandi flame, eucalyptus, simotwo and various indigenous trees

Figure 9: Tree cover observed on site

5.6.1.5. Access roads

The access roads at Chebiemit are poor and gets worse during the rainy seasons.

Figure 10: State of existing roads within Chebiemit Settlement

Figure 11: Chebiemit Hospital

5.7. Socio-Economic Baseline

The baseline socio-economic survey was conducted during the Month of November, 2023. The data was collected using socio-economic survey tool provided.

5.7.1. Land Use

The study areas are majorly residential with a small mix of commercial use. The structures in the settlement are diverse ranging from mud housing to masonry permanent housing, a few are storey buildings. The settlements have been adjudicated, and land ownership is not an issue. Small and medium-sized businesses are located throughout the settlements, with residents providing labour for both formal and informal businesses such as industries, small medium enterprises, agricultural activities, and Jua kali sector activities.

5.7.2. Population

The total population of the County is 147,747. The sub-counties within Elgeyo Marakwet are evenly distributed on either gender. There is a greater population of males and females in Marakwet West (males; 68,948 females; 68,560) and Keiyo South (males; 60,919 females; 59,827) sub-counties compared to Keiyo North (males; 49,601 females; 49,574) and Marakwet East (males; 47,849 females; 49,190). The current population in Chebiemit settlement is 2978. The design population was based on a design base year of 2025 and 2045 as the ultimate year. Table 2 below shows the projected population for Chebiemit Settlement.

Hence the following scenarios were prepared:

- Design to consultants figures as detailed above
- Design to estimate population numbers based on the consultants figures.
- Design to a 20 year projection based on the consultants figures with a growth rate of 4.2%[2].
- The design population is 2978 inhabitants.

[2] Source World bank open source data 2008

5.7.3. Land tenure

The proportion of landowners with title deeds in the County is 72.5%. The achievement is attributed to the adjudication of 18 sections of land which represented 90% of the intended land adjudication level within the plan period. Leasehold is most predominant land tenure system within the project area accounting for 70% of the respondents as shown in Figure 13 below.

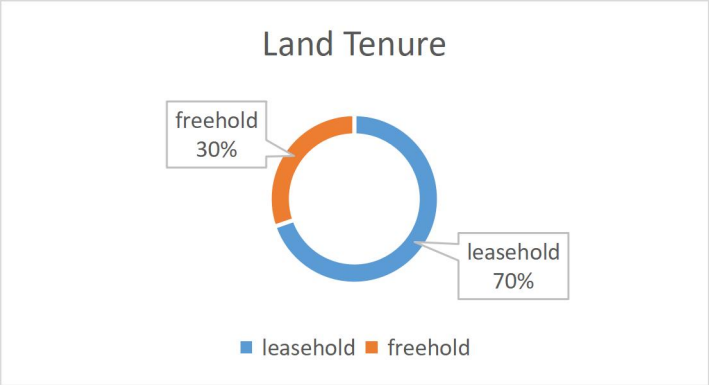


Figure 12: Land tenure

5.7.4. Age distribution

The age distribution of the respondents is presented in the figure below. Majority of the respondents are aged between 61-70 years as shown in Figure 14 below.

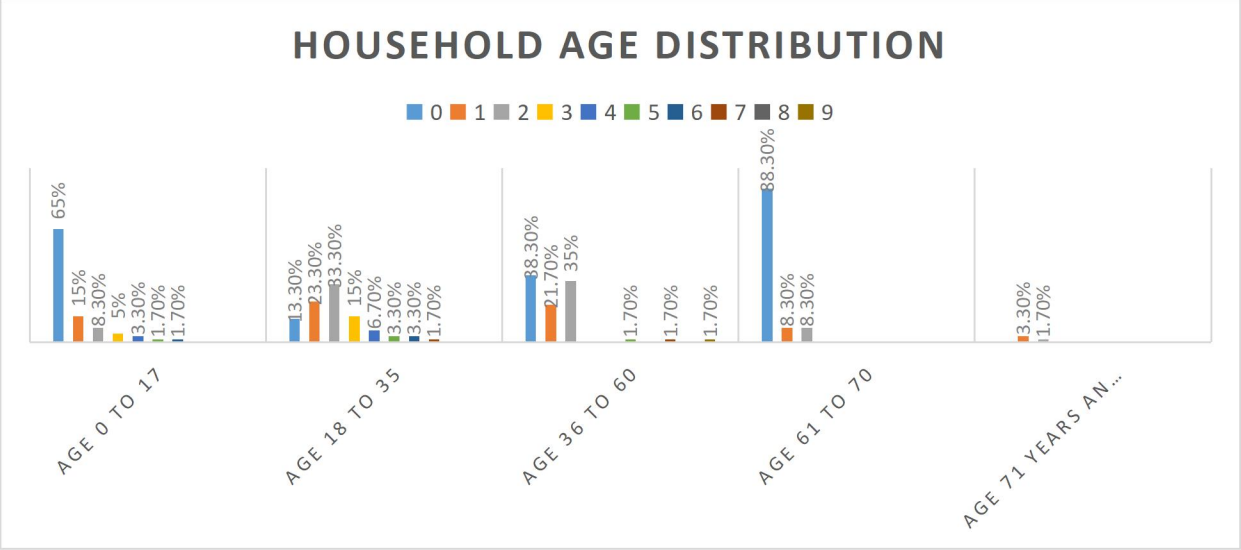


Figure 13: Age distribution

5.7.5. Gender Distribution of the Respondents

The survey data from the respondents indicates that 86% of household heads were males while 14 % were female. The data suggests that most of the surveyed households are headed by males. Nuclear family is the most preferred family type by most of the respondents interviewed within the project area. The changing cultural and social norms and the high cost of living are driving most people to coalesce around nuclear family setup. The gender distribution is presented in figure 28 below. Information on gender will also enhance gender mainstreaming into the project activities as per the legal, policy and guiding world best practices i.e. vision 2030 policy. The gender distribution of the respondents is shown in Figure 15 below.

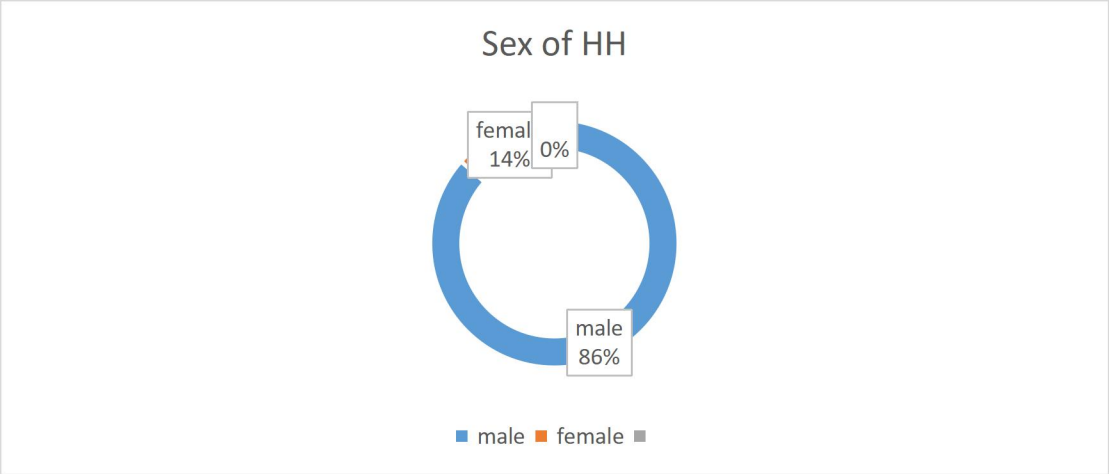


Figure 14: Gender Distribution of Household Heads

5.7.6. Marital status

Majority (82%) of the respondents are married as shown in Figure 16 below.

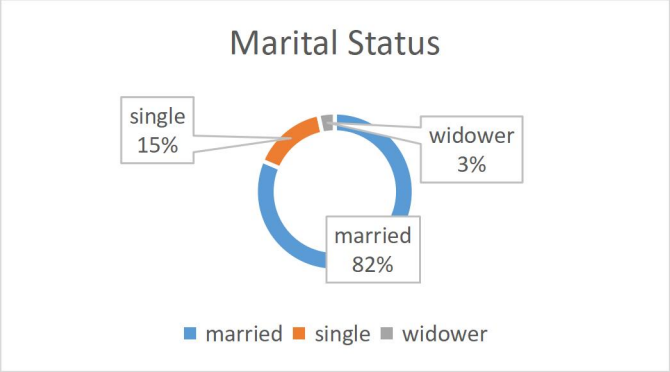


Figure 15: Marital status

5.7.7. Religion

All the respondents are Christians as shown in Figure 17 below.

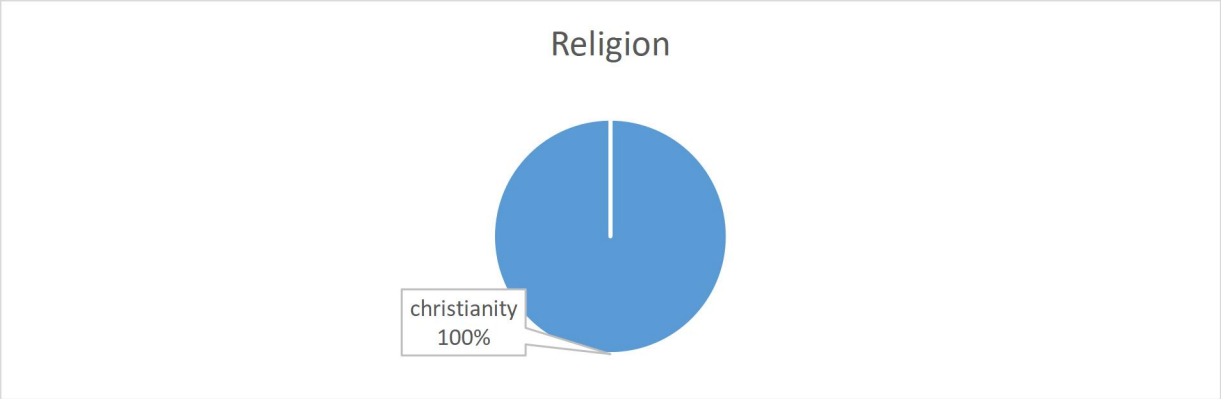


Figure 16: Religion

5.7.8. Educational Level

Net Enrolment Rate (NER) in the County is 85.51%. The pre-primary teacher learner ratio is 36:1. This was achieved through recruitment of additional 164 ECDE teachers. Majority of the respondents have attained middle level and secondary education. However, there are a few illiterate respondents who may require assistance during the implementation of the road project as shown in figure 12 below. The analysis and the findings of the socio-economic survey should inform the involvement of the PAPs in the project execution/ works i.e. the skilled PAPs can be involved/ prioritised during construction workers' recruitment while unskilled PAPs can also be involved in construction works that conforms with their abilities. The education levels of the respondents are shown in Figure 18 and Figure 19 blow.

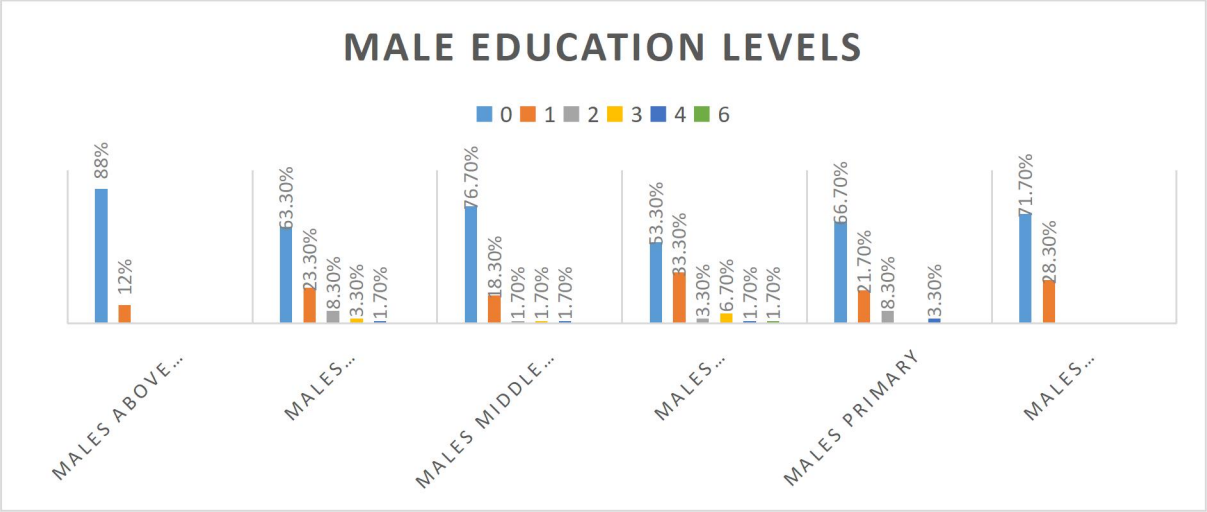


Figure 17: Male education level

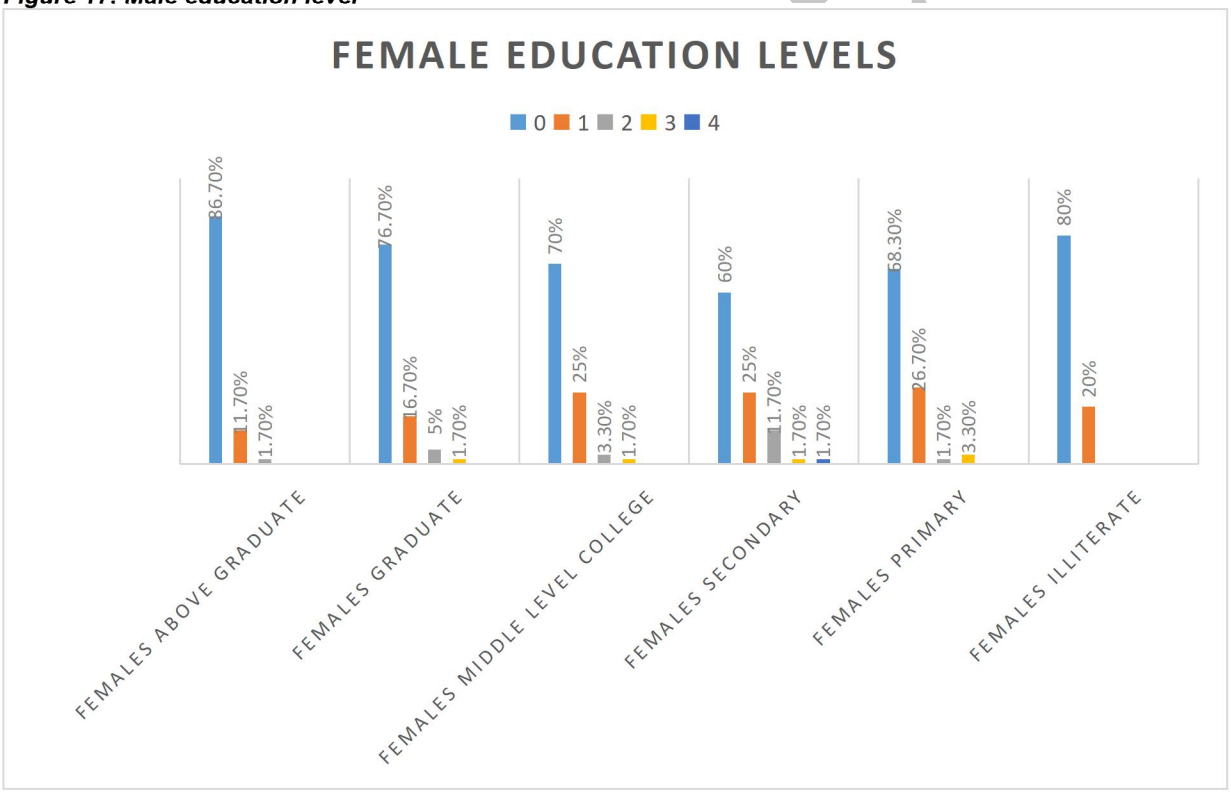


Figure 18: Female education level

5.7.9. Employment status

Majority (93%) of the respondents are self-employed as shown in Figure 20 below.

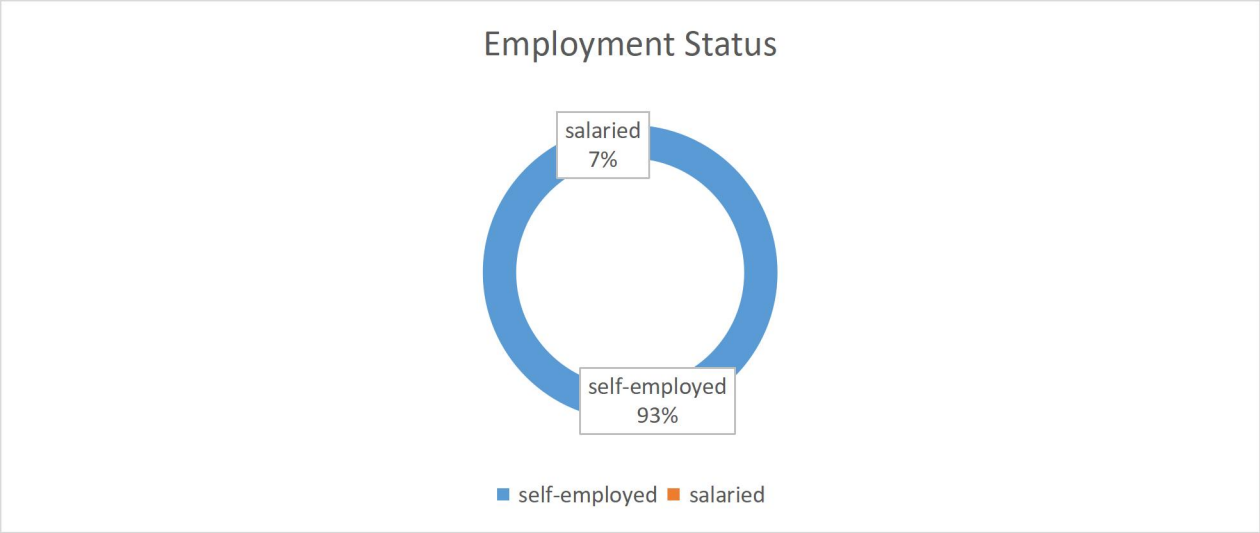
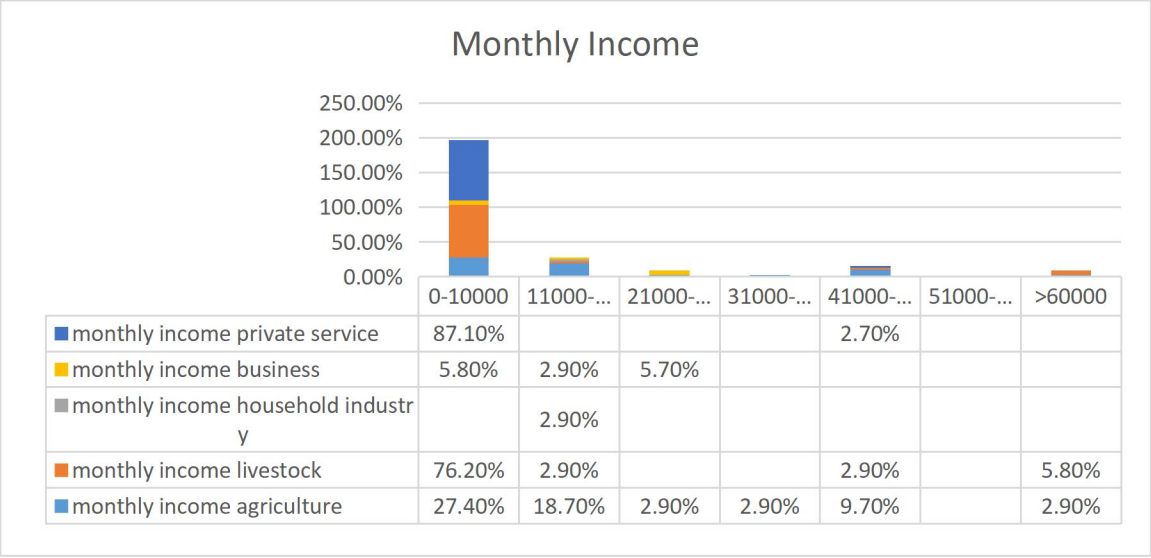


Figure 19: Employment status

5.7.10. Source of monthly income

Majority (87.1 %) of the respondents who were interviewed are self-employed and involved in livestock keeping as shown in Figure 21 below.



	0-10000	11000-...	21000-...	31000-...	41000-...	51000-...	>60000
monthly income private service	87.10%				2.70%		
monthly income business	5.80%	2.90%	5.70%				
monthly income household industry		2.90%					
monthly income livestock	76.20%	2.90%			2.90%		5.80%
monthly income agriculture	27.40%	18.70%	2.90%	2.90%	9.70%		2.90%

Figure 20: Source of monthly income

5.7.11. Household Expenditures

Majority of the respondents spend less than KES. 10,000 on basic needs as shown in Figure 22 below.

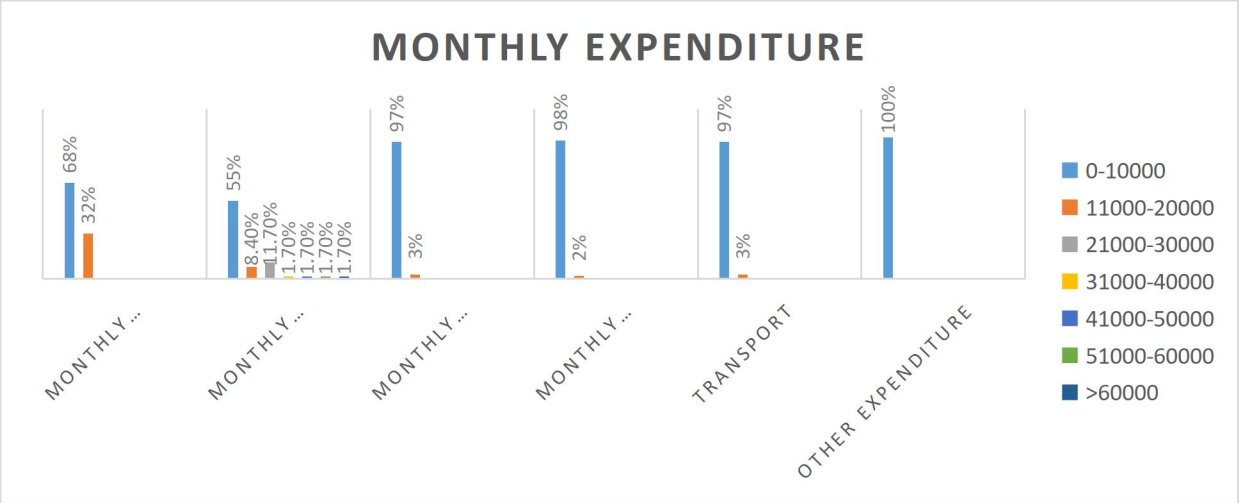


Figure 21: Household expenditure

5.7.12. Access to Electricity

Under energy, the electricity coverage in the County is 41.23% following connection of an additional 10,749 HHs to electricity within the last five years. The significant increase is attributed to the last mile connectivity project funded by the national government. Street lighting within the trading centres is at 85% contributing to more trading hours and a more secure business environment. All the respondents have access to electric connectivity as shown in Figure 23 below.

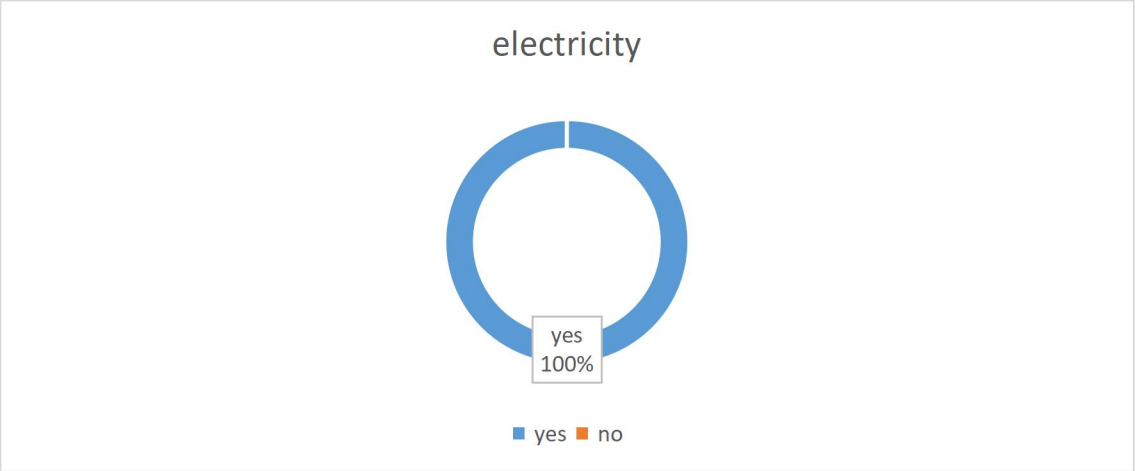


Figure 22: Access to Electricity and Connectivity

5.7.13. Access to Cooking Energy

Access to different sources of cooking energy vary across household as reported by the respondents and presented in the Figure 24 below. Majority (63%) of the respondents have access to cooking gas.

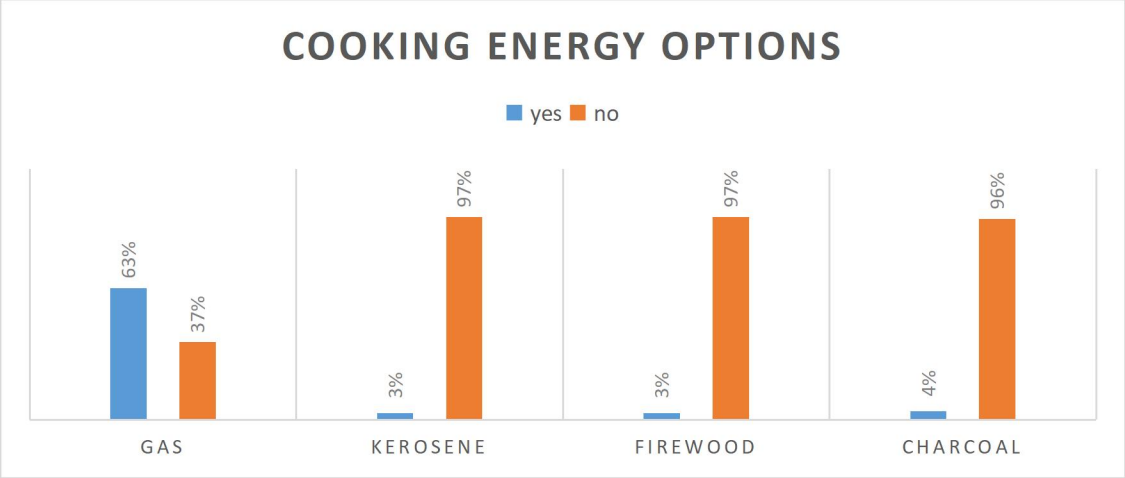


Figure 23: Cooking Energy

5.7.14. Sanitation

Latrine coverage in the County is 96.5%. However open defecation stands at 37% with most households without improved sanitary facilities. This has contributed to the spread of infectious disease vectors and has increased the risk of outbreaks of waterborne and vaccine preventable diseases. Notably the Cholera, Typhoid and Hepatitis B Outbreaks. Unstable soils along the valley and the escarpment consisting of stones is blamed for difficulty in digging pit latrines in those areas. A large percentage (98%) of the respondents have access to toilet facilities. This is why most the respondents have prioritized road construction ahead of water supply and construction of sanitary facilities as shown in Figure 25 below.

Figure 24: Toilet Facilities

5.7.15. Access to clean Water for drinking

The proportion of households with access to clean and potable water in the County is 37.07%, notwithstanding the construction of additional 115 water intakes and 291 storage tanks, drilling of 45 more boreholes, laying of an additional 688 Km of water pipeline and protection of 21.4. hectares of wetlands and water catchment areas in the last five years. Most of the respondents (98%) get water from different sources as shown in Figure 26. Most (92%) of the respondents get water within less than 1Km.

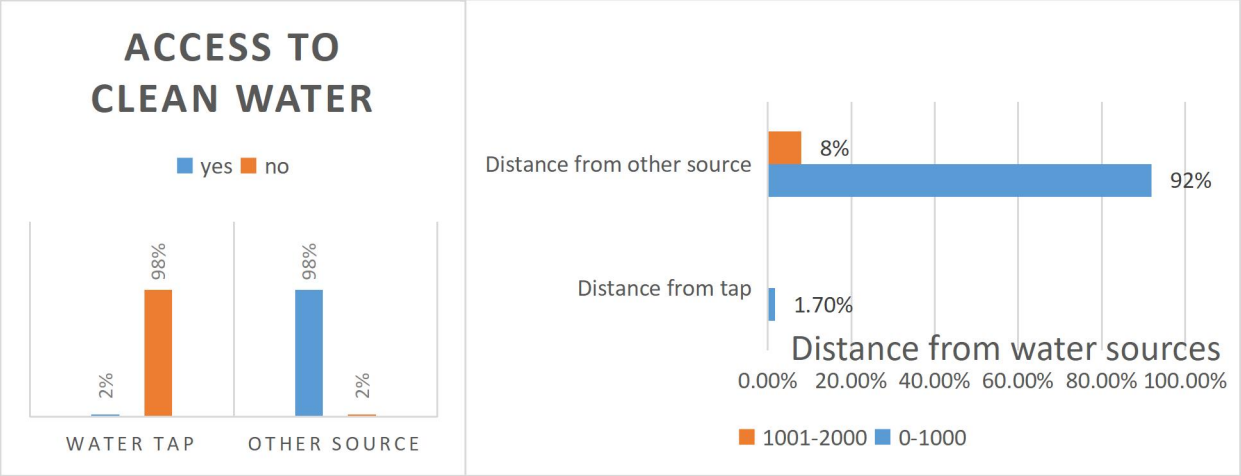


Figure 25: Access and distance to drinking water

5.7.16. Housing Ownership

Housing is one of the basic requirements for growth and development of the economy. Majority (70%) of the respondents live in rented houses as shown in Figure 27 below.

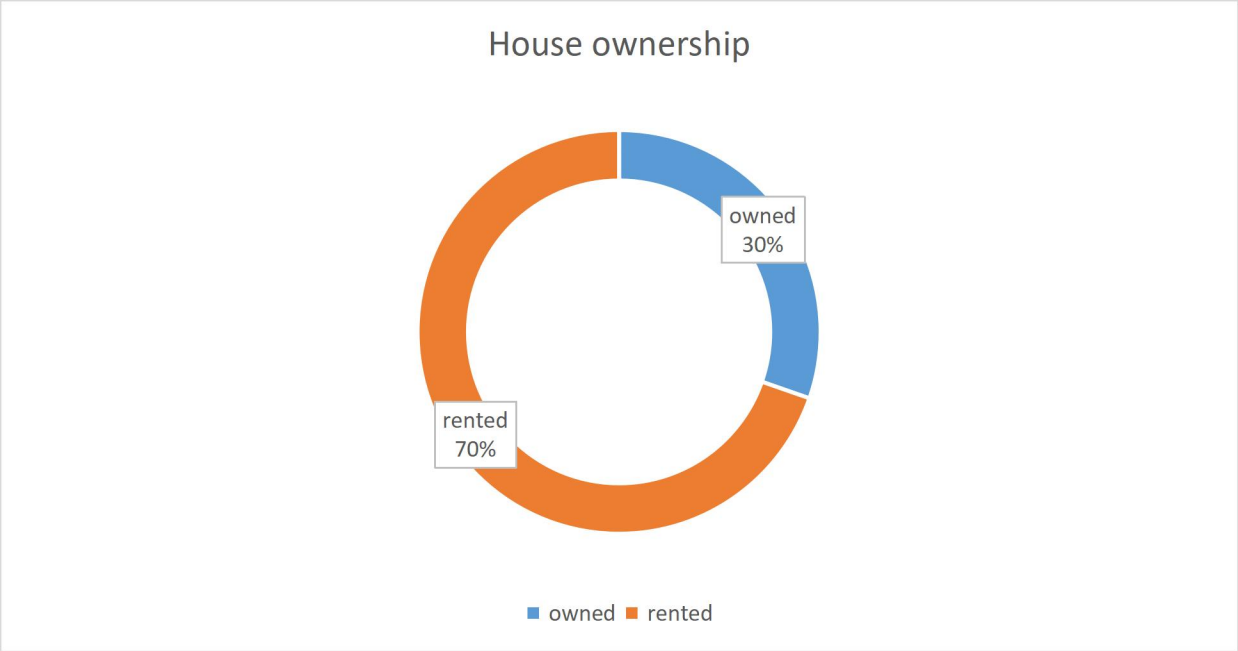


Figure 26: House ownership

5.7.17. Types of building materials

In Kenya housing is classified in terms of roofing, walling and flooring materials. In the settlements the main materials used for roofing are corrugated iron sheets. Corrugated iron sheet is the leading roofing material (98%). The preferred wall type is bricks used by 67 % of the respondents as shown in Figure 28 below.

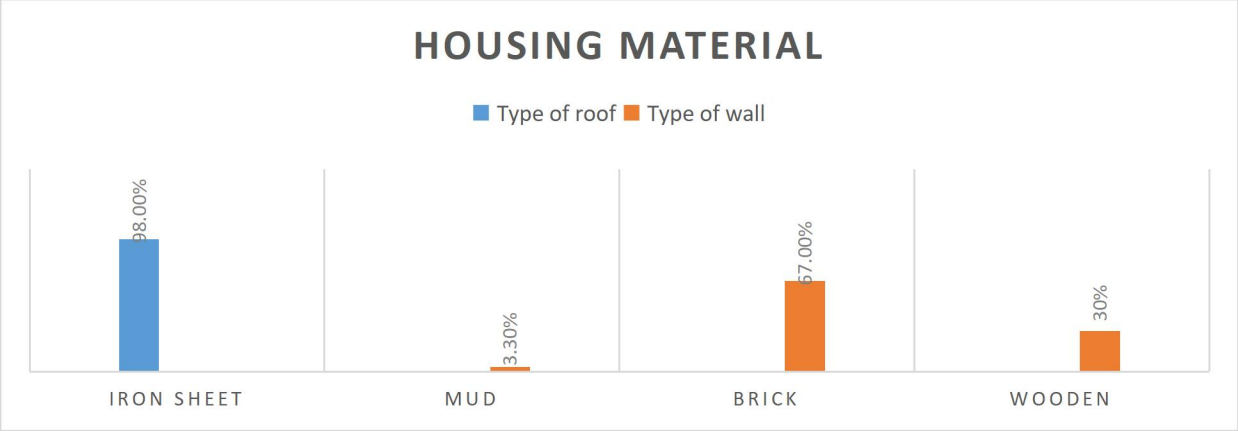


Figure 27: Housing materials

5.7.18. Ownership of household assets

The ownership of various assets by the respondents is shown in Figure 29 below.

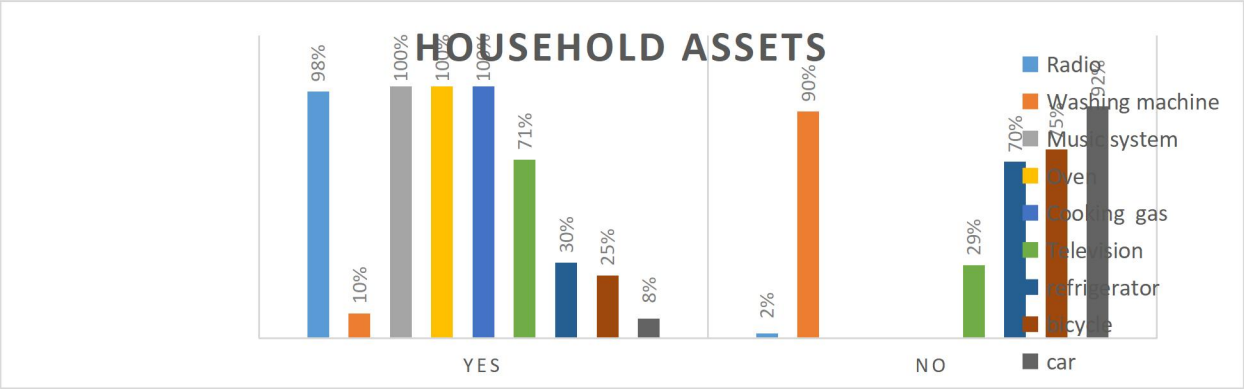


Figure 28: Household asset Ownership

5.7.19. Access to essential services

Access and proximity to essential public and social amenities and services is shown in Figure 30 and Figure 31 respectively.

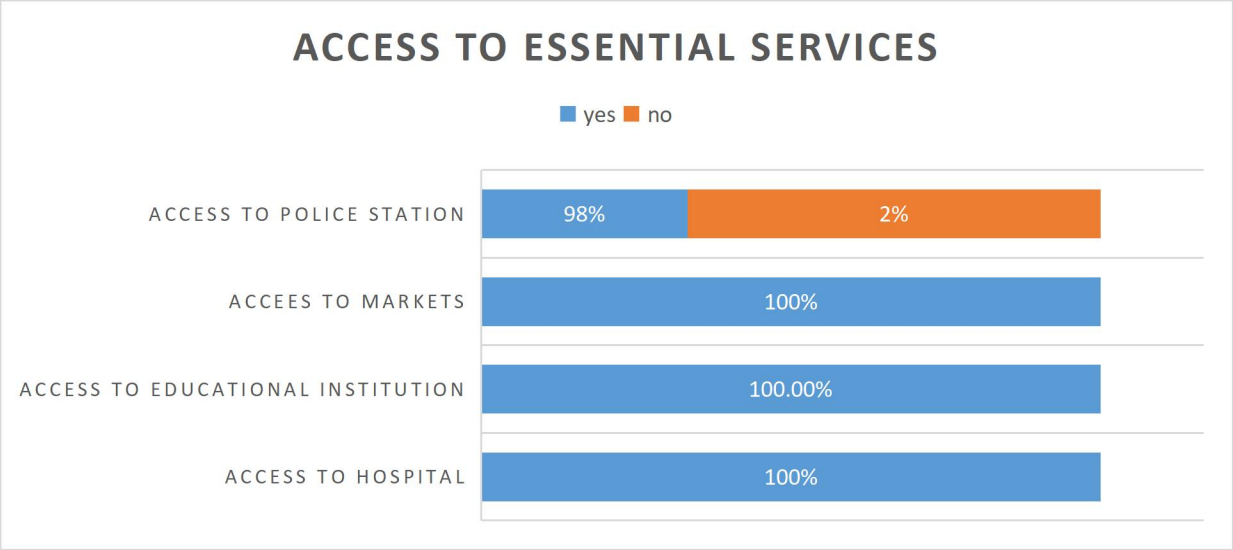


Figure 29: Access to essential services

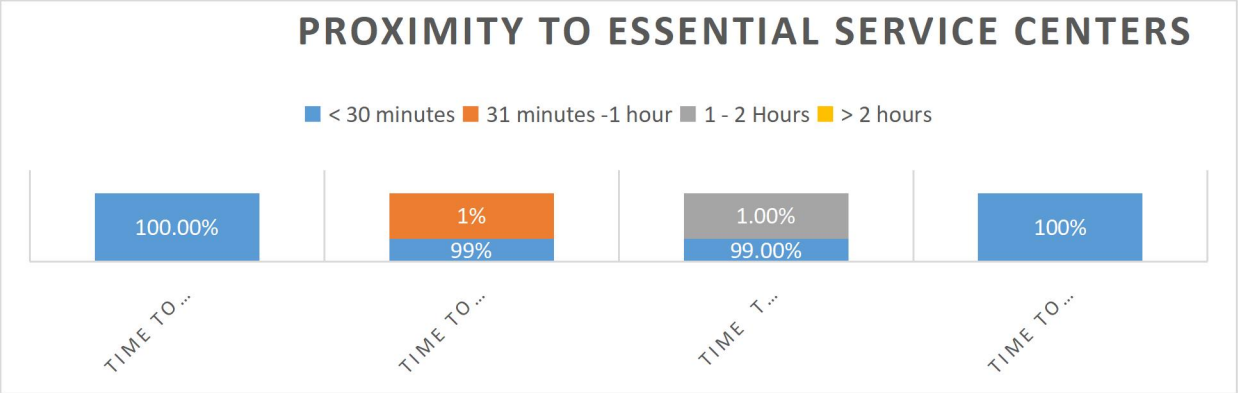
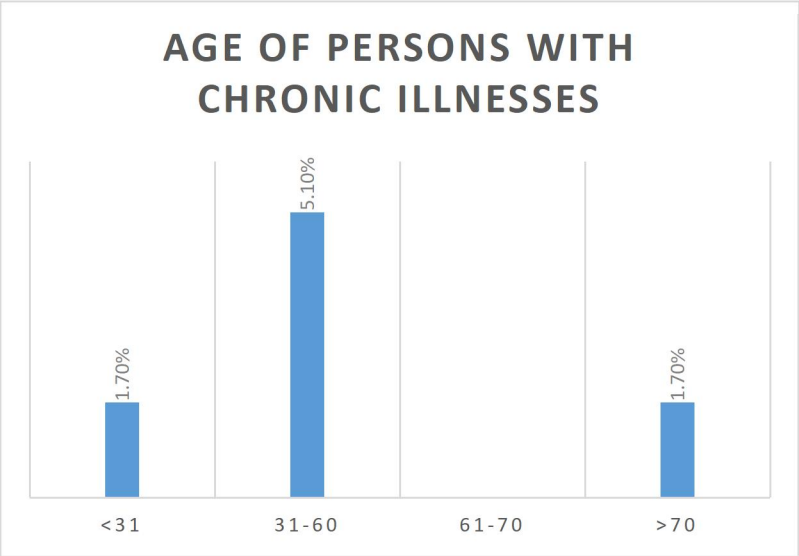
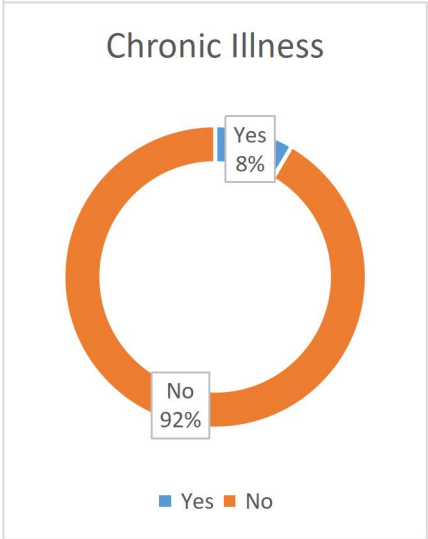


Figure 30: Proximity to essential services

5.7.20. Morbidity

Very few (8%) of the respondents reported having suffered chronic illnesses in the last one year and the morbidity is reported as very low as indicated below. Five percent of the respondents reported that they suffer from diabetes as shown in Figure 32 below.





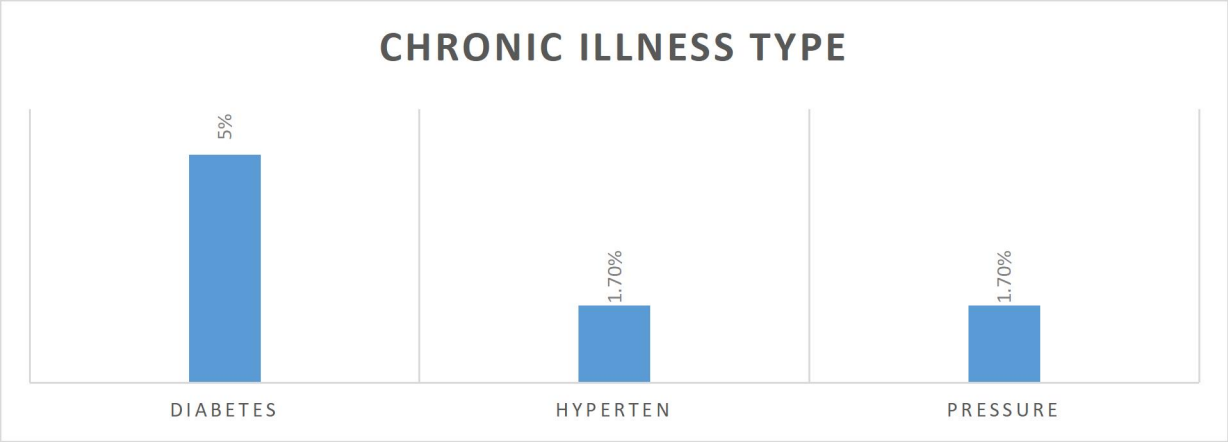


Figure 31: Morbidity

5.7.21. Knowledge on HIV

Most of the respondents (80%) reported that they have knowledge of HIV. The respondents also said that they know how it spreads. They also reported a number of prevention strategies as shown in Figure 33 below.

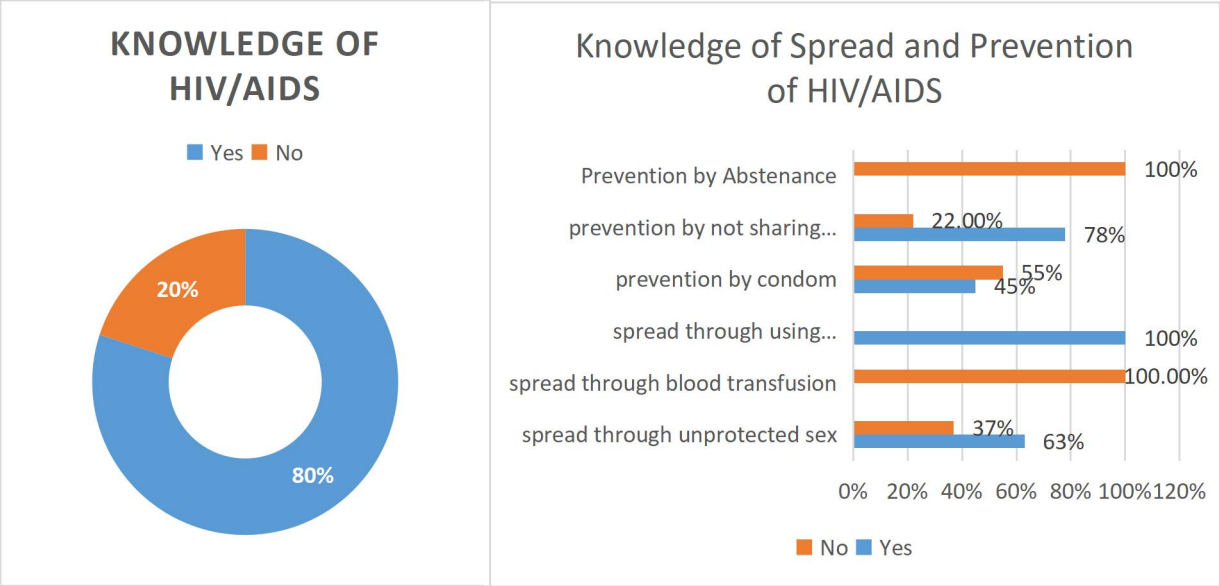


Figure 32: Knowledge on HIV

5.7.22. Gender Issues

The main gender issues are contained under the customary practices where the male vests ownership and control of productive assets. Women in the settlements are faced with a number of challenges including inadequate access to credit, lack of technical skills, multiplicity of roles

for women and inadequate access to education and training. The traditional delineation of labour persists with women assuming the entire responsibility for childcare, provision of food, water and firewood collection and the general maintenance of the homestead among others. Majority of the respondents said that household chores is predominantly performed by women. The majority of the respondents also said that women are involved in decisions concerning household matters but were also quick to point out that final decision is made by men. KISIP-2 should ensure that women also benefit from the opportunities presented by the projects to be implemented. The gender dynamics of the respondents is provided in Figure 34 and ***Figure*** 35 respectively.

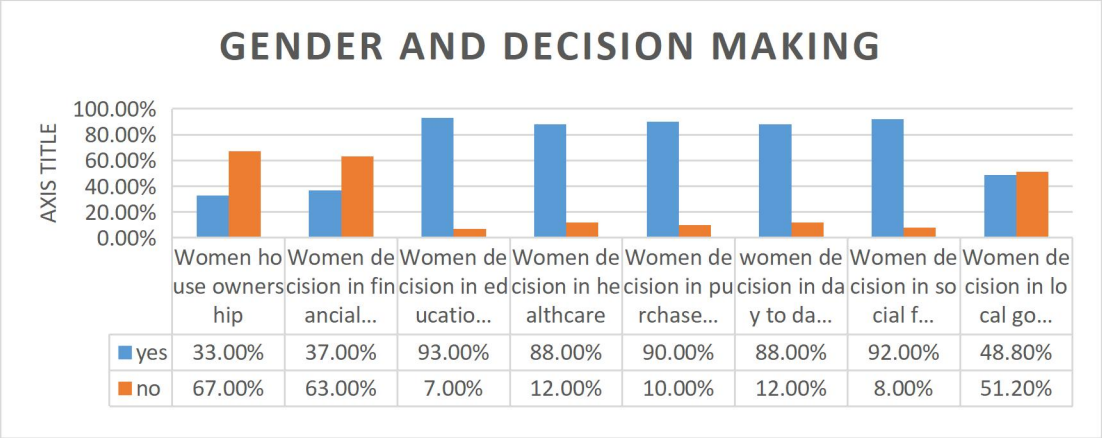


Figure 33: Gender and decision making

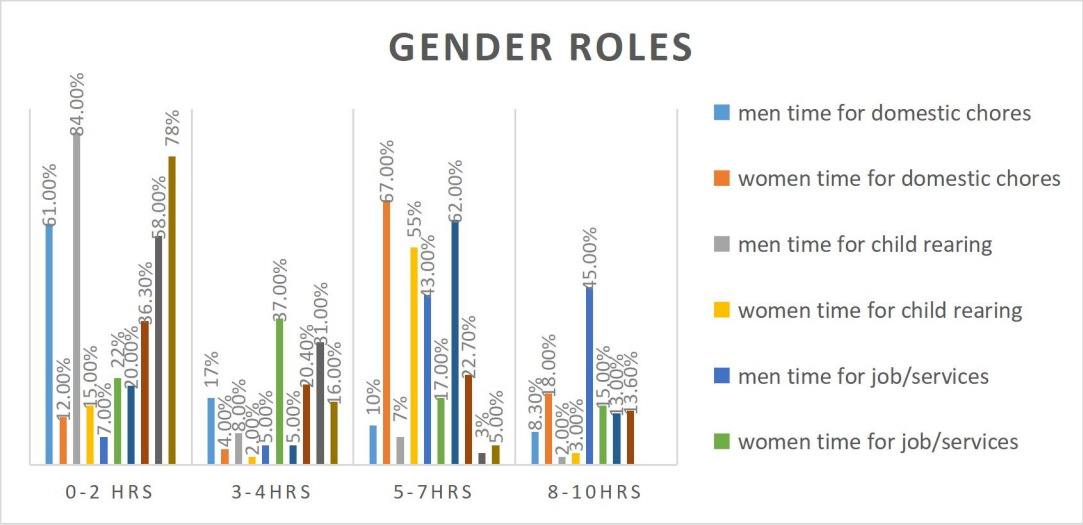


Figure 34: Gender roles

6. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORKS

The Project EIA complies with the Kenyan legislative, regulatory and policy requirements. Which reference is made throughout this document. reference is also made to the WBG EHS (Environmental, Health and Safety) Guidelines (2007a, 2007b)) and relevant international standards as part of Good International Industry Practice (GIIP). This subsection of the EIA provides an overview of the relevant policy, legal and institutional framework governing the Project EIA. Other relevant regulatory and legal framework specific to each Physical, Biodiversity or Social discipline is provided within each section of the EIA.

6.2. Devolution in Kenya

The Constitution of Kenya 2010 has given mandate to devolve certain powers from the National Government to the 47 County Governments, including responsibility for the agriculture sector, health services, early childhood development, public amenities, County trade development and regulations, County planning and development. The National Government continues managing issues related to security, education, and other national interests.

The operation was made effective after March 2013, where County Governors were elected by voters registered in the County. County Executive Committees are proposed by the County Governor and these implement County and national legislation, manage and coordinate the functions of the County administration and its departments, and implement any other functions conferred by the Kenyan Constitution. The County Assembly is formed by members elected from different wards in the County and by several nominated members representing specific interests.

With this new devolved governance system, the administrative governance decentralized into 47 counties receives a share of the national revenues and it is responsible for managing revenues from different sources within their counties (e.g. taxes on property).

6.3. The Policy Framework

6.3.1. Vision 2030

Kenya Vision 2030 is the current national development blueprint for the period 2008 to 2030 and was developed following on the successful implementation of the Economic Recovery Strategy

for Wealth and Employment Creation which saw the country's economy back on the path to rapid growth since 2002. The objective of the vision 2030 is to transform Kenya into a middle-income country with a consistent annual growth of 10 % by the year 2030. The 2030 goal for urban areas is to achieve "a well-housed population living in an environmentally-secure urban environment." This is to be achieved by bringing basic infrastructure and services—roads, street lights, water and sanitation facilities, storm water drains, footpaths, and others—to informal settlements.

KISIP implementation thus directly contributes to achieving this goal of the Vision 2030 by the provision of basic infrastructure to the informal settlement.

6.3.2. Sessional Paper No. 3 of 2009 on National Land Policy

The National Land Policy was formulated with the aim of securing rights over land and provision for sustainable growth, investment and reduction of poverty in line with Government overall development objectives. The policy offers a framework of policies and laws designed to ensure the maintenance of a system of land administration and management that will provide:

a) All citizens with opportunity to access and beneficially occupy and use land;
b) Economically viable, socially equitable and environmentally sustainable allocation and use of land;
c) Efficient, effective and economical operation of land markets;
d) Efficient and effective utilization of land and land-based resources; and
e) Efficient and transparent land dispute resolution mechanisms.

6.3.3. Sessional Paper No. 3 on National Housing Policy for Kenya

The overall goal of the Housing Policy is to facilitate the provision of adequate shelter and a healthy living environment at an affordable cost to all socio-economic groups in Kenya in order to foster sustainable human settlements. This will minimize the number of citizens living in shelters that are below the habitable living conditions. It will also curtail the mushrooming of slums and informal settlements especially in the major towns.

The proposed KISIP projects are paving the way for the enhancement of housing within the informal settlements.

6.3.4. Sessional Paper No. 6 of 1999 on Environment and Development

Following the first National Environment Action Plan (NEAP) in 1996, Sessional Paper No. 6 on environment and development was developed in 1999 to harmonize environmental and developmental goals to achieve sustainable development. It contained comprehensive strategies and appropriate guidelines for the government to act.

The key objectives of the Policy include: -

- To ensure that from the onset, all development policies, programmes and projects take environmental considerations into account,
- To ensure that an independent environmental impact assessment (EIA) report is prepared for any industrial venture or other development before implementation,
- To come up with effluent treatment standards that will conform to acceptable health guidelines.

Under this paper, broad categories of development issues have been covered that require a "sustainable development" approach. These issues relate to waste management and human settlement. The policy recommends the need for enhanced reuse/recycling of residues including wastewater, use of low or non-waste technologies, increased public awareness and appreciation of a clean environment. It also encourages participation of stakeholders in the management of wastes within their localities.

KISIP II projects are aiming at improving the environment by enabling proper sanitation trough roads and drainages and the provision of ablution blocks for use by families in the informal settlement areas.

6.3.5. National Water Policy 2021

The overall goal of the policy is to guide the achievement of sustainable management, development, and use of water resources in the country. The overall objective of the policy is to provide a framework that is dynamic, innovative, and effective for re-engineering the water sector.

Relevance: The project design should take into account all environmental components and resource conservation.

6.4. Regulatory Framework for Environmental Management in Kenya

6.4.1. Constitutional Provisions

Kenya's Constitution 2010 has strong provisions on the environment. With regard to environment, Section 42 of the Constitution states as follows: -

Article 43 (1) of the Constitution of Kenya, 2010 states that

Every person has the right—
(a) to the highest attainable standard of health, which includes the right to health care services, including reproductive health care;
(b) to accessible and adequate housing, and to reasonable standards of sanitation;
(c) to be free from hunger, and to have adequate food of acceptable quality;
(d) to clean and safe water in adequate quantities;
(e) to social security; and
(f) to education.

(2) A person shall not be denied emergency medical treatment.

(3) The State shall provide appropriate social security to persons who are unable to support themselves and their dependents.

In Sections 69 and 70, the Constitution has inter alia identified National Obligations in respect of the environment and Enforcement of Environmental Rights respectively as follows: -

Section 69 (1): The State shall—
(a) ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits;
(b) work to achieve and maintain a tree cover of at least ten per cent of the land area of Kenya;
(c) protect and enhance intellectual property in, and indigenous knowledge of, biodiversity and the genetic resources of the communities;

(d) encourage public participation in the management, protection and conservation of the environment;

(e) protect genetic resources and biological diversity;

(f) establish systems of environmental impact assessment, environmental audit and monitoring of the environment;

(g) eliminate processes and activities that are likely to endanger the environment; and

(h) utilize the environment and natural resources for the benefit of the people of Kenya.

(2) Every person has a duty to cooperate with State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources.

Section 70 provides for enforcement of environmental rights thus: -

(1) If a person alleges that a right to a clean and healthy environment recognized and protected under Article 42 has been, is being or is likely to be, denied, violated, infringed or threatened, the person may apply to a court for redress in addition to any other legal remedies that are available in respect to the same matter.

(2) On application under clause (1), the court may make any order, or give any directions, it considers appropriate—

(a) to prevent, stop or discontinue any act or omission that is harmful to the environment;

(b) to compel any public officer to take measures to prevent or discontinue any act or omission that is harmful to the environment; or

(c) to provide compensation for any victim of a violation of the right to a clean and healthy environment.

(3) For the purposes of this Article, an applicant does not have to demonstrate that any person has incurred loss or suffered injury.

Essentially, the New Constitution has embraced and provided further anchorage to the spirit and letter of EMCA 1999 whose requirements for environmental protection and management.

6.4.2. The Environment Management and Co-ordination (Amendment) Act, 2015 and its tools

The most pertinent and overriding statute that will be evoked is the Environmental Management and Coordination Act (EMCA 1999). EMCA 1999 was enacted in 2000 to harmonize environmental legislation previously scattered among 77 national laws. EMCA 1999 was updated in 2015 to - align its provisions to the Constitution of Kenya 2010. Section 29 of the EMCA 1999 that established the District and Provincial Environment Committees was repealed by Section 18 of the Amendment Act. The committees have been replaced by the County Environmental Committees whose obligations under the Act are: management of the environment affairs at the County level by developing County environment strategic action plan every five years and any additional functions prescribed under the Act or as assigned by the Governor by notice in the gazette.

The National Environmental Complaints committee replaced the Public Complaints Committee. Section 20 of the Amendments Act outlines the functions of the National Environmental Complaints Committee which are to investigate allegations or complaints related to the environment; prepare annual reports on the state of the environment and undertake public interest litigation on behalf of the citizens in environmental matters.

As the principal environmental legislation in Kenya, EMCA sets the legal framework for environmental management basically as follows: -

(i) Requirement for Environmental Impact Assessments for all new projects

Section 58 of the Environmental Law requires that an Environmental Impact Assessment (EIA) study precede all development activities proposed to be implemented in Kenya. The Act further requires that EIA studies so designed, be executed in accordance with the Guidelines for Conduct of EIAs and Environmental Audits (Kenya Gazette Supplement No. 56 of 13th June 2003) as published by the National Environmental Management Authority (NEMA).

(ii) Requirement for Annual Environmental Audits

In order to mitigate and control environmental damage from ongoing projects, Sections 68 and 69 EMCA require that all ongoing projects be subjected to annual environmental audits as further expounded in Regulation 35 (1) and (2) of Legal Notice 101 of June 2003.

To operationalize EMCA 1999, a number of subsidiary legislation (Regulations) have been developed, key among them:

6.4.2.1. Environmental Management and Coordination (Water Quality) Regulations, 2006

The Regulations provides for sustainable management of water resources including prevention of water pollution and protection of water sources (lakes, rivers, streams, springs, wells and other water sources). It is an offense under Regulation No. 4 (2), for any person to throw or cause to flow into or near a water resource any liquid, solid or gaseous substance or deposit any such substance in or near it, as to cause pollution.

Regulation No. 11 further makes it an offense for any person to discharge or apply any poison, toxic, noxious or obstructing matter, radioactive waste or other pollutants or permit the dumping or discharge of such matter into the aquatic environment unless such discharge, poison, toxic, noxious or obstructing matter, radioactive waste or pollutant complies with the standards for effluent discharge into the environment. Regulation No. 14 (1) requires every licensed person generating and discharging effluent into the environment to carry out daily effluent discharge quality and quantity monitoring and to submit quarterly records of such monitoring to the Authority or its designated representatives.

The regulations provide details on management (handling, storage, transportation, treatment and disposal) of various waste streams including: domestic, hazardous and toxic, pesticides, biomedical, and radioactive wastes.

Regulation No. 4 (1) makes it an offense for any person to dispose of any waste on a public highway, street, road, recreational area or in any public place except in a designated waste receptacle.

Regulation 5 (1) provides categories of cleaner production methods that should be adopted by waste generators in order to minimize the amount of waste generated and they include:

improvement of the production processes, monitoring the product cycle from beginning to end, and incorporating environmental concerns in the product design and disposal.

6.4.2.2. Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control (Regulations) 2009

The Regulations control pollution from excessive noise and vibrations to protect human health. Part II section 3(I) of these Regulations states that: no person shall make or cause to be made any loud, unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. Part II Section 4 also states that: except as otherwise provided in these Regulations, no person shall (a) make or cause to be made excessive vibrations which annoy, disturb, injure or endanger the comfort, repose, health or safety of others and the environment; or (b) cause to be made excessive vibrations which exceed 0.5 centimeters per second beyond any source property boundary or 30 meters from any moving source.

Part III, Section 11(1) states that any person wishing to (a) operate or repair any machinery, motor vehicle, construction equipment or other equipment, pump, fan, air-conditioning apparatus or similar mechanical device; or (b) engage in any commercial or industrial activity, which is likely to emit noise or excessive vibrations shall carry out the activity or activities within the relevant levels prescribed in the First Schedule to the Regulations. Any person who contravenes this Regulation commits an offense. Section 13(1) states that no person shall operate construction equipment (including but not limited to any pile driver, steam shovel, pneumatic hammer, derrick or steam or electric hoist) or perform any outside construction or repair work so as to emit noise in excess of the permissible levels as set out in the Second Schedule to these Regulations. These purposes include emergencies, those of a domestic nature and /or public utility construction.

Section 14 relates to noise, excessive vibrations from construction, demolition, mining or quarrying sites, and states that: where defined work of construction, demolition, mining or quarrying is to be carried out in an area, the Authority may impose requirements on how the work is to be carried out including but not limited to requirements regarding (a) machinery that may be used, and (b) the permitted levels of noise as stipulated in the Second and Third Schedules to these Regulations. It further states that the relevant lead agency shall ensure that

mines and quarries where explosives and machinery used are located in designated areas and not less than two kilometers away from human settlements and any person carrying out construction, demolition, mining or quarrying work shall ensure that the vibration levels do not exceed 0.5 centimeters per second beyond any source property boundary or 30 meters from any moving source.

Relevance: *Implementation of KISIP project should adhere to these requirements especially during the construction phase of the project.*

6.4.3. Environmental Management and Coordination (Air Quality) Regulations, 2014

Part II of the regulation prohibits any person through their activities to directly or indirectly cause immediate or subsequent air pollution by emitting any liquid, solid or gaseous substance in levels exceeding those set out in the First Schedule of the regulation.

Relevance: *Implementation of KISIP project should adhere to these requirements especially during the construction phase of the project.*

6.4.4. Environmental Management and Co-ordination (Waste Management) Regulations, 2006

These Regulations were formulated to provide guidelines, procedures and standards for the environmental governance to ensure compliance. The Legal Notice No. 121, 2006 was enacted to regulate waste disposal activities within the country, Kenya. These Regulations define rules for the management of waste in general and for the management of solid waste, industrial waste, hazardous waste, pesticides and toxic substances, biomedical waste and radioactive substances.

Relevance: *Implementation of KISIP project should adhere to the requirements prescribed in the regulations regarding waste management especially during the construction phase of the project.*

6.4.5. The Occupational Safety and Healthy Act, No. 15 of 2007 (Revised 2010)

This Act of Parliament was enacted to provide for the health, safety and welfare of persons employed in workplaces, and for matters incidental thereto and connected therewith. At every workplace where chemicals or other toxic substances are manipulated, the employer shall

develop a suitable system for the safe collection, recycling and disposal of chemical wastes, obsolete chemicals and empty containers of chemicals to avoid the risks to safety, health of

employees and to the environment. Under the Act, the employer as per section 6 has responsibilities among others to:

- Provide and maintain plant and systems and procedures of work that are safe and without risks to health
- Ensure safety and absence of risks to health in connection with the use, handling, storage and transport of articles and substances
- Provide information and training on safety and health
- Carry out appropriate risk assessments
- Take immediate steps to stop any operation or activity where there is an imminent and serious danger to safety and health

Relevance: *Implementation of KISIP project should adhere to these requirements and ensure that all workers are protected in all phases of the project.*

6.4.6. Sectoral Legislations

6.4.6.1. County Government Act, 2012

The County Government Act, 2012 repealed the Local Government Act.

The Act provides for the role of the County government in planning in urban areas or cities. Under section (37) of the Act, a county executive committee shall—

(a) monitor the process of planning, formulation and adoption of the integrated development plan by a city or municipality within the county;

(b) assist a city or municipality with the planning, formulation, adoption and review of its integrated development plan;

(c) facilitate the coordination and alignment of integrated development plans of different cities or municipalities within the county and with the plans, strategies and programmes of national and county governments; and

(d) take appropriate steps to resolve any disputes or differences in connection with the planning, formulation, adoption or review of an integrated development plan.

The County Government Act mandates County Governments to carry out spatial planning within their counties. Section 110 provides that a spatial plan for the county should contain a strategic assessment of environmental impact of the spatial development framework.

The County Government is obligated to provide a clean and safe environment within its area of jurisdiction.

6.4.6.2. Public Health Act Cap 242

This Act aims at achieving a clean environment free of any nuisance so as to promote public health and safety. This is applicable in this project as a number of the proposed projects will directly and/or indirectly improve the health of the residents.

For the interpretation of the Act, Section 15 (IX) indicates that any noxious matter or wastewater discharged from any premises, such as a building constitutes a nuisance. The act also stresses that no person shall cause a nuisance to exist on any land or premise occupied by him. Because of the above, the Act acknowledges that it shall be the duty of all local authorities (County Governments) to take all lawful measures for always maintaining their district in a clean and sanitary condition for remedy of any nuisance or condition liable to be injurious to health.

6.4.6.3. The Water Act, 2016

The Water Act provides for the establishment of a legal and institutional framework for:
a) the management, conservation, and control of water resources, and for the acquisition and regulation of rights to use water;
b) the regulation and management of water supply and sewerage services; and
c) related purposes
It prohibits activities that may cause pollution of water sources for domestic, industrial, agricultural or recreational use.

Section 25 of the Act requires a permit to be obtained for among other uses of water from a water resource, discharge pollutant in a water resource. Section 75 and sub section 1 allows a licensee for water supply to construct and maintain drains, sewers and other works for foul water arising or flowing upon land for preventing water belonging to the licensee or which he is authorized to take from being polluted. However, if the proposed works affect or are likely to

affect any body of water in the catchments, the licensee shall obtain consent from the water resources management Authority.

Section 76 states that no person shall discharge any trade effluent from any trade premise into sewers of a licensee without the consent of the licensee upon application indicating the nature and composition of the effluent, maximum quantity anticipated, flow rate of the effluent and any other information deemed necessary.

Underground water sources are likely to be polluted by seepage of construction waste contaminants and drains-water from the building. Construction work also potentially uses a lot of water.

Physical and Land Use Planning Act, 2019

The objects of the Act are to provide:

a) The principles, procedures and standards for the preparation and implementation of physical and land use development plans at the national, county, urban, rural and cities level;

(b) The administration and management of physical and land use planning in Kenya;

(c) the procedures and standards for development control and the regulation of physical planning and land use;

(d) a framework for the co-ordination of physical and land use planning by county governments;

(e) a mechanism for dispute resolution with respect to physical and land use planning;

(f) a framework for equitable and sustainable use, planning and management of land;

(g) the functions of and the relationship between planning authorities;

(h) a robust, comprehensive and responsive system of physical and land use planning and regulation; and

(i) a framework to ensure that investments in property benefit local communities and their economies.

The main principle among others to note for this project is that:

Development activities shall be planned in a manner that integrates economic, social and environmental needs of present and future generations;

6.4.6.4. Kenya Roads Board Act, 1999

The Kenya Roads Board was established in July, 2000 by the Kenya Roads Board Act, Act No. 7 of 1999. The main object for which the Board was established is to oversee the road network in Kenya and thereby co-ordinate its development, rehabilitation and maintenance and to be the principal adviser to the Government of the Republic of Kenya on all matters related thereto. The Board has the responsibility of managing revenues arising from the Roads Maintenance Levy Fund (RMLF).

Roads Act 2007: The legal and institutional aspects of the new road sub-sector policy were subsequently incorporated in the Kenya Roads Act 2007 which provides for the establishment of three independent Road Authorities namely:

(i) Kenya National Highways Authority (KeNHA) responsible for the administration, control, development and maintenance of all class A, B and C roads in Kenya.

(ii) Kenya Rural Roads Authority (KeRRA) responsible for rural and small town roads including class D, E roads and Special Purpose Roads.

(iii) Kenya Urban Roads Authority (KURA) is significant to KISIP as it takes charge of all City and Municipal Roads. This is the Authority that LAs will coordinate with in the design and implementation of investments targeting improvement of roads.

The Authorities fall under the Ministry of Transport and Infrastructure, which will retain the role of policy formulation, and general oversight of public roads including regulatory aspects such as technical standards.

Legislations pertaining to land reservation and Ownership: The entire regime of laws relating to land has been explored under the Resettlement Policy Framework.

National Gender and Equality Commission Act 2011

The overarching goal for NGEC is to contribute to the reduction of gender inequalities and the discrimination against all; women, men, persons with disabilities, the youth, children, the elderly, minorities and marginalized communities.

Relevance: *This Act will be applicable for beneficiary groups and in workforce-related activities in the KISIP sites.*

6.4.6.5. Public Procurement and Disposal Act 2022

An ACT of Parliament to give effect to Article 227 of The Constitution; to provide procedures for efficient public procurement and for assets disposal by public entities; and for connected purposes ENACTED by Parliament of Kenya. The objectives of public procurement include improving efficiency, competition, and accountability. There are six main types of objectives: price, quality, timeliness, sustainability, proportionality, and neutrality.

Relevance: *All procurement under KISIP will be subject to this statute.*

6.4.6.6. Land Act, 2012

It is the substantive law governing land in Kenya and provides legal regime over administration of public and private lands. It also provides for the acquisition of land for public benefit. The government has the powers under this Act to acquire land for projects, which are intended to benefit the general public.

This Act provides for the procedure to be followed during compulsory acquisition of land by the Government and the just compensation which should be paid promptly and in full to all persons whose interest in land has been affected.

An abbreviated Resettlement Action Plan was undertaken to establish whether there are any displacements along the proposed project locations and the findings captured in the ARAP report on Annex VI of this report.

6.4.6.7. HIV and AIDS Prevention and Control Act 2006 (Revised 2012)

The object and purpose of this Act is to (a) promote public awareness about the causes, modes of transmission, consequences, means of prevention and control of HIV and AIDS; (b) extend to every person suspected or known to be infected with HIV and AIDS full protection of his human rights and civil liberties. The Act provisions will be applied during the Project implementation phase where the contractor will be required to create awareness on prevention and management among workers and community at large.

6.4.6.8. The Urban Areas and Cities (Amendment) Act 2019

In classifying an area as a city, municipality or town, regard shall be had to the ability to provide the following services and also the existence of the services required to be provided by the National Government.

legal basis for classification of urban areas (City) when the population is at least 250,000; a municipality when it is at least 50,000; and a town when the population is at least 10,000 and a market center when the population is at least 2,000.

6.4.6.9. Physical Planning Act 1996 (286) (Revised) in 2012

Section 16 of the Physical Planning Act (Chapter 286) provides that the Director may prepare a regional physical development plan. The plan shall consist of, inter alia, a statement of policies and proposals with regard to the allocation of resources and the locations for development within the area. The Act requires the Director to invite any person interested to make representations to do so within sixty days of the publication of the plan. On approval of the local physical development plan no development shall take place on any land unless it is in conformity with the plan.

Section 24 provides for the Director to prepare also a local physical development plan whose purpose is to guide and coordinate development and for the control of the use and development of land. Physical planning thus provides a mechanism for the assessment of options and establishment of policy objectives and goals. These provisions notwithstanding, the physical planning process has so far not been used to elaborate policy options for development. This omission does not however detract from the potential of the physical planning process to facilitate the identification and regulation of policy options for resource development and use.

6.4.6.10. Public Participation Act, 2018

This Act of Parliament provides a general framework for effective public participation and to give effect to the constitutional principles of democracy. The purpose of the act includes promotion of democracy and public participation of the people according to Article 10 of the Constitution, promote community ownership for public decisions and promote public participation and collaboration in governance processes. Therefore, adequate consultations were held within target Counties as discussed in Chapter (7) of this EIA report.

6.4.6.11. Data Protection Act, 2019

An Act of Parliament to give effect to Article 31(c) and (d) of the Constitution; to establish the Office of the Data Protection Commissioner; to make provision for the regulation of the processing of personal data; to provide for the rights of data subjects and obligations of data controllers and processors; and for connected purposes.

The Act expressly prohibits the processing of personal data of a data subject where their consent has not been obtained. It is upon the data controller and/or data processor to prove that they obtained the consent of the data subject before processing their personal data.

All information obtained from the KISIP II consulted parties is confidential and only used for the purposes of this report. Consent will be obtained to process al the required data from them.

6.4.6.12. Sexual Offences Act, 2006

An Act of Parliament that makes provision about sexual offences aims at prevention and the protection of all persons from harm from unlawful sexual acts and for connected purposes. Section 15, 17 and 18 focuses mainly on sexual offenses on minors (children).

6.4.6.13. Labour Relations Act, 2007 (Revised) 2012

An Act of Parliament to consolidate the law relating to trade unions and trade disputes, to provide for the registration, regulation, management and democratization of trade unions and employers organizations or federations, to promote sound labour relations through the protection and promotion of freedom of association. This act will be applied by the labour force on site in addressing disputes related to working conditions.

6.4.6.14. The Children Act, 2022

Part II Section 18 of the Act indicates that (1) No person shall subject a child-to-child labour, domestic servitude, economic exploitation or any work or employment which is hazardous, interferes with the child's education or is likely to be harmful to the child's health or physical, mental, moral or social development where a child is any individual who has not attained the age of eighteen years.

Relevance: *This Act prohibits child labour during construction and all other phases of the project.*

6.4.6.15. County Government Act No. 17 of 2012

The preamble to the Act gives an overriding object and purpose of the Act. It states that, 'An Act of Parliament to give effect to Chapter Eleven of the Constitution; to provide for county governments' powers, functions and responsibilities to deliver services and for connected purposes. Part II elaborate on the functions and powers of the county government, emphasizing its constitutional authority to enter into contracts, acquire and hold and dispose of assets, and delegate functions, such as through sub-contracts and partnerships. Part VI considers the focus and administration of decentralization to the sub-county level, including to urban areas and cities.

Part VIII focuses on Citizen Participation stating that "citizen participation in county governments shall be based upon reasonable access to the process of formulating and implementing policies, laws, and regulations, including the approval of development proposals, projects and budgets, the granting of permits and the establishment of specific performance standards" (87(b)); and "promotion of public private partnerships, such as joint committees, technical teams, and citizen commissions, to encourage direct dialogue and concerted action on sustainable development" (87(f)).

On the aspect of public communication and access to information, the county governments are vested to "undertake advocacy on core development issues such as agriculture, education, health, security, economics, and sustainable environment among others" (94(c)).

The County Government Act, 2012, provides the basis for spatial plans as statutory requirements in the county. The Act stipulates a 10-year spatial plan be developed by each county to provide for:-

(a) Spatial depiction of the social and economic development programme of the county as articulated in the integrated county development plan;

(b) A clear statement of how the spatial plan is linked to the regional, national and other county plans; and

(c) A clear clarification on the anticipated sustainable development outcomes of the spatial plan.

Relevance: *The KISIP project should adhere to the requirements of this Act in ensuring that the proposed project is in line with the current county government spatial plans.*

6.4.6.16. Legislations Relating to Physical Cultural Property

The administration of Kenya's cultural heritage is informed by the Kenya National Policy on Culture and Heritage (NPCH) and by the provisions of articles 11, 40, and 69 of the Kenya Constitution (Republic of Kenya 2010). At the practical level, the National Museums and Heritage Act, Cap 216 and less importantly both the Environmental Management and Co-ordination Act, Cap 387 and the Land Act 2012 operationalize the management of Kenya's cultural heritage. Others include Cap 19 (the Public Archives and Documentation Service Act of 1991) and Cap 509 (Kenya's Industrial Property Act of 2001).

The National Museums and Heritage Act, (Cap 216), mandates the National Museums of Kenya as the institution to protect, preserve, and control the use of Cultural Heritage in the country. The Act repealed the then Antiquities and Monuments Act cap 215. The Act provides for the control, establishment, development and management of national museums and the protection, identification, transmission and conservation of the natural and cultural heritage of Kenya.

Under the Act, an object or area of cultural, historical, or scientific significance, can be declared as protected. In accordance with Cap 216, archaeological sites may not be destroyed, excavated or altered without an exploration/excavation permit issued by the cabinet secretary or designate.

A chance find of previously unknown heritage resources e.g. graves, shrines, archaeological sites, etc. encountered during project construction or operation will be managed according to a Chance Find Procedure. The Chance Find Procedure is a process that prevents chance finds from being disturbed until an assessment by a competent specialist is made and actions consistent with the requirements are implemented. This procedure will be applicable to all activities conducted by project personnel, including contractors, that have the potential to uncover a heritage item/site. The procedure details the actions to be taken, the roles and responsibilities, and the response times required from both project staff, and any relevant heritage authority.

The Environmental Management and Coordination Act, requires project proponents to undertake Environmental Impact Assessment (EIAs) for proposed projects. For projects, with potential impact on cultural and heritage sites, a cultural and heritage impact assessment is required as part of the EIA.

Relevance: *KISIP projects must take history and cultural heritage into consideration while locating and implementing projects. Upon screening, no cultural heritage site was identified along the project areas. See screening checklist on Annex VII of this report.*

6.4.7. Public Participation Act, 2018

The Public Participation Act in Kenya is designed to enhance, promote and facilitate public participation in governance processes12. The Act aims to give effect to the principles of public participation as provided for in Articles 1(2), 10(2), 33(1)(a), 35, 69(1)(d), 118, 174(c) and (d), 184(1)(c), 196,201(a) and 232(1)(d) of the Constitution. The Act also aims to promote democracy and participation of the people, transparency and accountability in decision making, public awareness and understanding of governance processes, community ownership of public decisions, and public participation and collaboration in governance processes.

Relevance: *Public Participation is key in ensuring the involvement of all stakeholders before implementation of the project.*

6.5. Relevant International & Regional Conventions

Kenya is a signatory to several international instruments on environmental management. These are summarized in Table 8 below:

Table 8: Relevant International and Regional Conventions

Convention	Objective
Sustainable Development Goals	The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests. Relevant SDGs: SDG 1: No poverty SDG 6: Clean water and sanitation SDG 10: Reducing inequality SDG 11: Sustainable cities and communities SDG 13: Climate action
The African Convention on the Conservation of Nature (1968)	To encourage individual and joint action for the conservation, utilization and development of soil, water, flora and fauna for the present and future welfare of mankind, from an economic, nutritional, scientific, educational, cultural and aesthetic point of view.
The Ramsar Convention (1971) on wetlands of International Importance	To stop the progressive encroachment on and loss of wetland now and in the future, recognizing the fundamental ecological functions of wetlands and their economic, cultural, scientific and recreational values.
The Protection of World and Cultural Heritage convention (1972)	To establish an effective system of collective protection of the cultural and natural heritage of outstanding universal values.
The Convention on the conservation of migratory species of wild animals (1979).	To protect those species of that migrate across or outside national boundaries
The Vienna Convention for the protection of the Ozone Layer (1985)	To protect human health and the environment against adverse effects resulting from modification of the ozone layer
Montreal Protocol on Substances that deplete the Ozone layer (1987)	To protect the ozone layer by taking precautionary measures to control global emissions of substances that depletes it.
The Basel Convention on the trans-boundary Movement of Hazardous Wastes and their disposal	To reduce trans-boundary movements of waste subject to a minimum consistent to the environmentally sound and different effects of such wastes and to minimizing the amount and toxicity of hazardous wastes generated and ensuring their environmentally sound management

Convention on Biological Diversity- (CBD 1992)	To promote diversity and sustainable use and encourage equitable sharing of benefits arising out of the utilization of genetic resources
United Nations Framework Convention on Climate Change (UNFCCC, 1992) and the Paris Climate Agreement 2016	An international Treaty adopted in 1992 that came into force in 1994. The objective of UNFCCC is to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The Paris Climate Agreement 2016, operationalizes UNFCCC whose long term goal is to keep the increase in global temperatures to well below 2 degrees above pre-industrial levels, and to pursue efforts to limit the increase to 1.5 degrees, to substantially reduce impacts of climate change.

6.6. World Bank's Safeguard Policies

The World Bank's Safeguard policies are designed to help ensure that projects proposed for Bank financing are environmentally and socially sustainable. These operational policies are as shown in Table 9 below:

Table 9: Triggering of World Bank Safeguard Policies Policy

Operational Policy	Triggered	Discussion
OP 4.01: Environmental Assessment	Yes	The project triggers the Environmental Assessment safeguard. The project is assigned Category B, based on the results of the screening of the potential project activities.
OP 4.04: Natural Habitats	No	The policy will not be triggered but relevant mitigation measures should be applied if project activities are identified to have direct or indirect impacts on natural habitats or forests.
OP 4.36: Forestry	No	
OP 4.09: Pest	No	Project is not supporting agriculturally based Management interventions
OP 4.11: Physical Cultural Resources	Yes	A number of culturally significant assets could be found in the project area and therefore consistent with OP 4.11, the Physical Cultural Resources is triggered and steps to safeguard this issue are integrated into the ESMF, including a set of chance find procedures (Annex 12.
OP 4.10: Indigenous Peoples	No	The project activities will be located within informal settlements, where population does not match the criteria for identification of indigenous or vulnerable and marginalized groups.
OP 4.12: Involuntary Resettlement	Yes	Both integrated planning for tenure security and infrastructure upgrading interventions have potential for involuntary resettlement. A standalone document to guide the process of involuntary resettlement and compensation (Resettlement Policy Framework) is

		prepared and publicly disclosed.
OP 4.37: Safety of Dams	No	The project will not finance dams.
OP 7.50: Projects in International Waterways	No	No interventions planned with direct impact on international waters.
OP 7.60: Projects in Disputed Areas	No	Projects will not be located in disputed areas.

(i) Environmental Assessment (OP 4.01)

OP 4.01 requires Environmental Assessment (EA) for projects proposed for Bank financing to ensure that they are environmentally sound and sustainable, and as a basis for decision making. Under OP 4.01 projects are screened and assigned either of four categories each of which requires different levels of environmental assessment as follows:-

- Category A: A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works.

- Category B: A proposed project is classified as Category B if it's potential adverse environmental impacts on human populations or environmentally important areas—including wetlands, forests, grasslands, and other natural habitats—are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigation measures can be designed more readily than for Category A projects.

- Category C: A proposed project is classified as Category C if it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for a Category C project.

- Category FI: A proposed project is classified as Category FI if it involves investment

of Bank funds through a financial intermediary in subprojects that may result in adverse environmental impacts.

The KISIP has been classified as environmental category B and under an Environmental and this Environmental Impact Assessment report has been prepared in compliance with OP 4.01.

6.7. World Bank's Environmental and Social Safeguard Standards (ESS)

Although the criteria for the assessment was operating safeguard policies, we also reviewed the current World Bank ESS also designed to help ensure that projects proposed for Bank financing are environmentally and socially sustainable. These operational standards are as indicated in Table 10:

Table 10: Triggered Safeguards Standards

E$S STANDARD	STANDARD REQUIREMENT	KISIP TRIGGER
Standard 1:	Assessment and Management of Environmental and Social Risks and Impacts;	Yes
Standard 2:	Labor and Working Conditions;	Yes
Standard 3:	Resource Efficiency and Pollution Prevention and Management;	Yes
Standard 4:	Community Health and Safety;	Yes
Standard 5:	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement;	Yes
Standard 6:	Biodiversity Conservation and Sustainable Management of Living Natural Resources;	No
Standard 7:	Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities;	No
Standard 8:	Cultural Heritage;	No
Standard 9:	Financial Intermediaries;	No
Standard 10:	Stakeholder Engagement and Information Disclosure	Yes

6.8. World Bank Environmental and Social Policy for Investment Project Financing

The Bank classifies project into one of four classifications: High Risk, Substantial Risk, Moderate Risk or Low Risk and thus will be done in accordance with the national law. (World Bank ESF 2018) Screening for KISIP project was undertaken and the checklist presented in Annex VII and VIII for the social and environmental screening respectively. The screening undertaken indicates that the proposed projects are likely to have minimal or no adverse environmental or social risks and impacts and do not require further environmental and social assessment following the initial screening and therefore classified as moderate risk.

6.9. Inter-Sectoral Coordination in Environmental Protection

Among other functions, EMCA mandates NEMA to regularly review and gazette standards and regulations for environmental quality as a way of guiding activity in all sectors. Further, in recognition that EMCA is an umbrella law coordinating diverse sectoral statutes, all of which are still in force, the Legal Notice 101 of EMCA requires that the respective sectors be consulted as 'Lead Agencies' in making decisions pertaining to environmental assessment for projects in respective sectors. Therefore, to ensure that NEMA does not approve projects that contradict sector policies and legislation, all EIA reports are subjected to review by the relevant sectors in their capacity as Lead Agencies whereby their opinions have a strong bearing on the final decision arrived at by NEMA.

6.10. Project Governance and Administrative Structure

The following Table 11 below presents a list of administrative agencies and government institutions that regulate the development of the project.

Table 11: Project Governance and Administrative Structure

Institution	Description
National Level	
Project Steering Committee:	Responsible for Strategic guidance and in consultation with World Bank, provides approval of Annual Work Plans and Budgets

Institution	Description
National Level	
National Project Coordination Team	Responsible for the overall coordination of Project activities. NPCT is in charge of Project design, financial management, procurement, M&E, reporting, capacity building and communication. Further, it supports the participating counties to ensure adherence to IDA's applicable policies and guidelines. The national level works in liaison with the Council of Governors (CoG) to ensure effective coordination and communication with the participating County Governments.
County Level	
County Project Coordination Team	Responsible for implementing Project activities within respective counties and supervising the day-to-day project activities.
Community Level	
Settlement Executive Committee (SEC)	Established in each participating settlement. Responsible for community mobilization, awareness creation and ensuring community participation on Project activities.
Grievance Redress Committee (GRC)	Responsible for receiving and registering grievances/ complaints, investigating and giving resolutions. Cases that are not resolved are escalated to CPCT, then to NPCT and WBGRM. Complainants are also at liberty to seek redress at the court of law.

7. PUBLIC AND STAKEHOLDER CONSULTATIONS

The main objective of the community and stakeholder consultation was to disseminate project information and to incorporate the views of the Project Affected Persons (PAPs) in the design of the mitigation measures and preparation of environmental and social management plans.
The specific objectives of the stakeholder and public consultation process included:

- Introduction of the proposed project to stakeholders;
- Allow the stakeholders to provide comments and raise issues and concerns regarding the project;
- Gather and document communities' concerns about the project and the EIA process;
- Obtain opinions and suggestions directly from the stakeholders on their preferred mitigation measures;
- Assist in building and strengthening relationships with the community and stakeholders;
- Identify local leaders with whom further dialogue can be continued in subsequent stages of the project.

The stakeholder and the community consultation process was done in compliance with the Kenyan Regulatory requirements set out in the Environmental Management and Coordination Act 1999 and the Environment Management and Coordination (Amendment) Act, 2015. The process is also designed to adhere to the international best practice specified by the International Finance Corporation, Social and Environmental Management and Assessment Systems (Performance Standard1).

7.1. Consultation Approach

Stakeholder identification was done through a social scan; key county officials who are able to influence the outcome of the project as well as all the affected communities. The communities formed Settlement Executive Committees (SECs) who provides an interface between the communities and the project. The SEC members through the project teams and local area leadership were able to mobilize community members for the successful community participation in during consultations.

7.2. Consultation Methods

The consultation methods used to engage the stakeholders in the specific projects included:

One- to-one meetings with Key Informants

This was undertaken by the team of experts who visited the key informants in their respective offices. Their comments were captured in questionnaires and other taken note of for inclusion in the report. All information was obtained and presented with consent of the stakeholders.

Community/Public Meetings

Community meetings organized by the County Project Coordination team together with the SEC member's leadership and the local leadership were undertaken at agreed venues and all community members were invited. Both stakeholder and public consultations were held during the EIA studies and comments, concerns and recommendations have been considered in the development of this EIA report.

7.3. Key stakeholder consultations outcomes

Key informant interviews were held within the month of November between 20th and 23rd. The relevant government officers were visited in their offices and comments were noted with several Sub- County water officers and heads within Elgeyo Marakwet County. The feedback questionnaires are presented on Annex IX of this report. Table 12 below presents the feedback of the key stakeholders consulted. The obtained information is presented with consent from the participants.

Table 12: Key ***Stakeholders feedback***

Designation/Department	Question	Comment	Recommendation
Town Administrator	Main land tenure system	The systems are; private, trust land and un alienated government land.	Grievance redress committee to handle emerging issues during project implementation
	Current state of land ownership in the settlements.	Public land	Residents ready for the development agenda to improve their living standards.
	Land adjudication	Adjudicated and titled.	Yes

	How one gets to know actual land owner in absence of Title Deeds.	Community resource persons like elders take lead basing on history to identify the owner of land parcel.	Should done in away so that conflicts may not arise.
	Challenges and good cases in land take for public purposes.	Public utilities have been put up. Lack of infrastructural facilities on the land. Land grabbing	Mapping and proper documentation of public land. Beaconing of all land belonging to the public.
	Grievance and conflict resolution mechanism being practiced in the project area.	Existence of grievance redress committees. Nyumba-kumi initiatives. Chief`s dispute resolutions. Customary dispute resolutions.	This will aid in settling conflicts that may arise from project implementation phase.
Environmental Officer	Main water sources around project areas.	Piped water from water supply company, boreholes, streams, rivers and rain water. There is also a water catchment area (chereng`anyi forest) hosting both indigenous and exotic trees within project areas.	Most available water sources are unreliable and therefore need for greater improvements. There`s need for continuity in conserving our water catchment areas to counter the effects of climate change.
	General water quality in project areas.	Clean and safe water for domestic use and irrigation.	Due to high population in this settlements, there`s need to increase water points to sustain the whole community.

	Water accessibility to local communities	Community access water supply from water companies at a fee. Residents also harvest rain water during rainy seasons and store it in storage tanks for use. The area is also surrounded by rivers and streams which boosts water supply for both domestic and farming activities.	There`s need for a reliable source of water
	Waste water disposal	Most waste water is disposed into pit latrines, channeled to water sources and others use it for irrigation purposes.	The residents proposed to have waste water disposal site in and Chebiemit.
	Solid waste management	Collection pits in homesteads and burning. Collection points and later collected by county government trucks for disposal. Collecting and composting.	Both Chebiemit settlements have already identified sites for solid waste disposal.

7.4. Public and Stakeholder Consultations Outcome

Both stakeholder and public consultations were held during the EIA studies and comments, concerns and recommendations have been considered in the development of this EIA report.

7.4.1. Chebiemit Public Baraza

The public baraza for Chebiemit settlement was held at AIC church building on 13th November, 2023. The minutes and list of participants is provided in A-RAP report presented in Annex VI.

Table 13: Schedule for Public Baraza

Settlement	Date	Venue	Male	Female	PWDs	Total
Chebiemit	14/11/23	AIC church	19	19	0	38

The priorities that Sobocon consultancy agreed to work on according to their priorities include; Roads and drainage, public toilets, and street lights high mast (mulika mwizi) to reduce thefts and crimes.

Complaints and requests.

- The community members raised an issue on a dumping site which is next to Chebiemit hospital and the river; this matter was raised by Samuel Tenoi, a resident. He wanted to know the environmental rules that guide the location of dumping and waste selection sites as far as health care is concerned. The town planner and the ward Administrator were absent in the participation.
- Toilet ablution for a man named Raphael Kimaiyo who has lived in that plot since 1959 was an issue because of the impact of a road to be constructed across his piece of land. He was promised by the chair of disturbance fee and not competition benefits. The 14 roads to be constructed there have both positive and negative impacts which should be taken into consideration.
- People living with disability (PLWD) were asking if they have a portion to participate in the coming projects on environmental and social matters.
- The people wanted more education on cultivation along riverbanks distance per meters.
- They requested tree seedlings provision and the knowledge about the types and nature of trees that grow in their environment well.

NB// Chebiemit is named after a natural tree which is hardwood, therefore they were requesting for tree seedlings. Generally, the people are welcoming and eager to take care of their environment because the current Elnino issue has challenged them on matters of global warming and pollution.

7.4.1.1. Issues arising from public Baraza

Table 14: Issues arising from public Baraza

No	Questions	Answers

.		
1.	Will my toilet which was built in 1959 and assumed to be on the road to be demolished and how?	The consultant will write details and take photos of the toilet and also GRC Members will sort it out.
2.	Will the local youth be employed during the project implementation?	The contractor will be unveiled to the community members before commencement of works and the youth have been assured of employment especially the unskilled labor depending on the availability of the human resources in the area.
3.	There was a concern that the members had so many questions and requested for town planner from Elgeyo Marakwet and the ward administrator to have a meeting with them.	The community members to inform the ward administrator of the community concerns.
4.	Why are some proposed roads wider than others?	The ways roads are, measurements will be taken as they are but in case drainage is to be put, some of them will be squeezed.as per the maps, it is obvious that roads are not the same.
5.	Is there any compensation for those who have constructed on the road?	The consultant is taking photos and measurements of the structures which are on the road. Disturbance fee will be taken into consideration .
6.	Need for Cooperation with the Consultant	The chief urged the residents to cooperate with the consultant so as to ensure smooth running of the project
7.	Will the SEC and GRC members trained on their roles?	The consultant will organize for SEC and GRC training. They will be communicated on when the training will be effected.

*****Detailed minutes of the meeting are presented in Appendix II of this report**

7.4.1.2. Focus Group discussions

Focus group discussion was held on 13th November, 2023 at Chebiemit restaurant. The SEC chairman with the assistance of the ward administrator took the discussants through the proposed projects which included roads and drainage, street lights, dumping site, public park, multipurpose hall, public toilets, market stalls, water supply, sport field and green park. The consultant elaborated that out of the proposed projects the following would be given priorities: roads and drainage, ablution block, street lights and high mast lights. She stated the significance of public participation which would ensure awareness of $Kisip_2$ project by the community members. She then explained that the consultant is carrying out socio economic study whereby the community members would give data from the questionnaires. The members unanimously agreed on the levels of prioritization of the developments.

Table 15: Issues arising from FGDs

No.	Questions/Concerns	Answers
1	Can multipurpose hall added to the list as one of the priorities?	The SEC members to raise the issue to the county government. They can assist in constructing the multipurpose hall.
2	How many roads to be constructed?	All roads marked in the map will be put into consideration
3	Will the local youth be employed during the project implementation?	The contractor will be unveiled to the community members before commencement of works and the youth have been assured of employment especially the unskilled labor depending on the availability of the human resources in the area.
4	Need for Cooperation with the Consultant.	The SEC members to cooperate with the consultant so as to ensure smooth running of the project.

7.4.1.3. Presentation of the project impacts

Anticipated impacts of the proposed project during construction and operation phases.

Positive Impacts

1. Improved mobility.
2. Proper drainage channels.
3. Employment creation for locals mostly youths and women.
4. Enhanced business environment.
5. Attraction of investors due increased security and accessibility.
6. Increased business due to long operation hours.

7. Reduced drugs and substance abuse by youths because they will be fully engaged.
8. Improved living standards
9. Access to safe and clean water for domestic use.
10. Improved sanitation standards.
11. Social growth in terms of population increase.
12. Improved access to social amenities.
13. Improved scenery of the area.

Negative Impacts.

1. Noise pollution from construction machineries.
2. Land pollution during excavation
3. Displacement of some residents.
4. Solid waste disposal.
5. High pregnancy rates emanating from interaction between locals and construction teams.
6. High rate of sexually transmitted diseases between locals and the team.
7. Destruction of vegetation cover.
8. Water pollution downstream from oil spillage during machinery operations.
9. Air pollution from dust generated during operation.
10. Increased crime due to rural urban migration.

Proposed ways to Manage Anticipated Impacts.

a) The contactor to mitigate dust emissions by watering soil.
b) Regular servicing of machineries to reduce oil spillage and noise pollution.
c) Plant trees on alternative sites to replace the excavated vegetation.
d) Creation of solid waste management policy to ensure cleanliness and proper disposal of wastes.
e) Sensitize youths to engage in income generating activities instead of engaging in crime.

7.5. Grievance Resolution

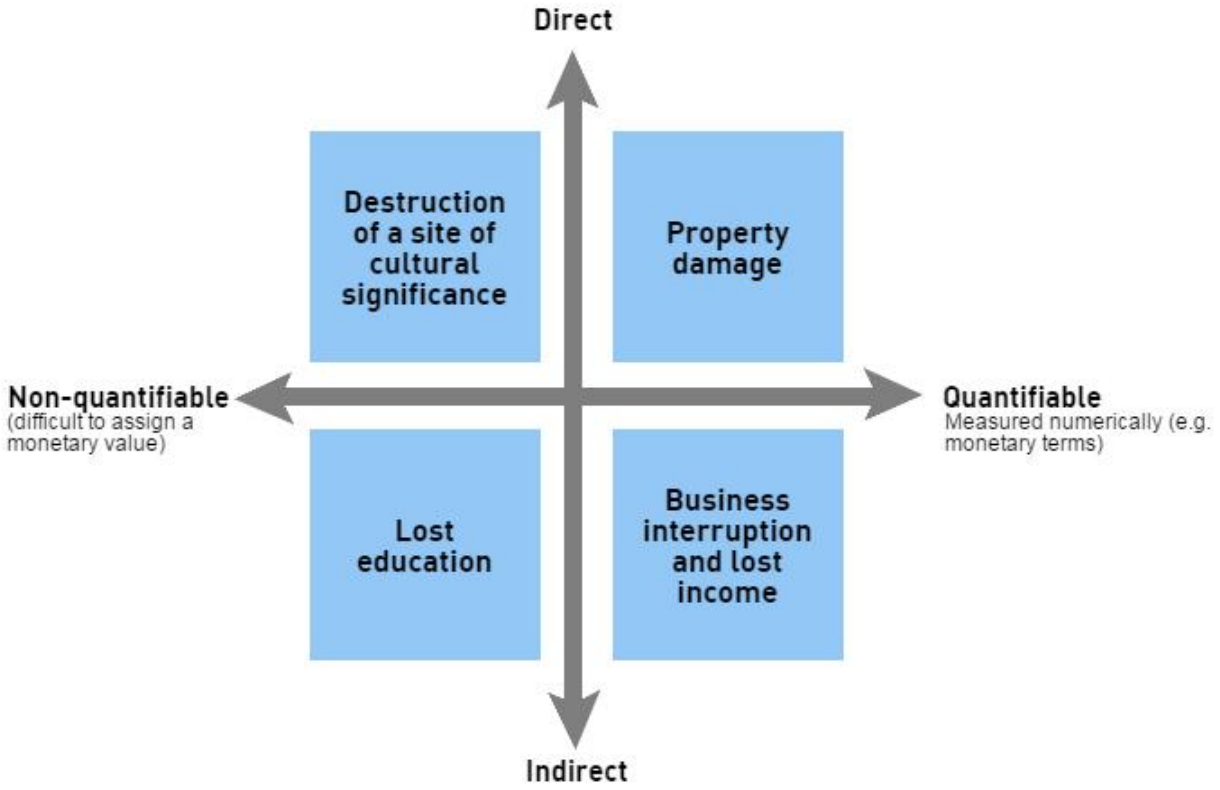
Grievance resolution is set out in the Abbreviated RAP report included in Annex VI of this report.

8. ENVIRONMENTAL AND SOCIAL IMPACT ANALYSIS

This section presents the proposed projects identified possible environmental, social and economic impacts. Whilst the KISIP II project is aimed at development and improving people's lives, it can also lead to adverse impacts to both the physical and social environment. EIA is thus a formal process to predict the environmental consequences of the proposed developments and to plan appropriate measures to eliminate or reduce adverse effects and to augment positive impacts.

Impacts can be classified as follows:

- Positive (beneficial) or negative (adverse);
- Direct or indirect, long-term or short-term in duration, and wide-spread or local in the extent of their effect;
- Cumulative Impacts –Impacts that build up over time.



8.1. Impact Identification and Analysis Methodology

The identification and assessment of environmental and social impacts is a multi-faceted process, using a combination of quantitative and qualitative descriptions and evaluations. It involves applying scientific measurements and professional judgement to determine the significance of environmental impacts associated with a proposed project[3]. Other potentially significant impacts or those of stakeholder concern, the impact identification and evaluation process.

The identified Impacts were categorized as negative and positive. Further, negative impacts were analyzed based on impacts consequence and impacts likelihood as shown on Table 16 and Table 17 below. Similarly, impacts rating was determined based on impacts consequence and impacts likelihood as shown in Table 18. Impacts prediction was then made during the construction and the operation phases of the proposed projects. Mitigation measures were then proposed with the hierarchy of avoidance, minimization, mitigation and offsetting the impacts.

Table 16: Impacts Consequences

Severity / Magnitude of Impact	Rating	Spatial Scope / Geographic Extent of Impact	Rating	Duration of Impact	Rating
Insignificant / non-harmful	1	Activity specific	1	One day to one month	1
Small / potentially harmful	2	Area Specific	2	One month to one year	2
Significant / slightly harmful	3	Whole Site	3	One year to ten years	3
Great / harmful	4	Regional/Neighbouring areas	4	Life of operation	4
Disastrous / Extremely harmful	5	National	5	Post closure / permanent	5

Note:
Total Rating of Impact Consequence = Rating of Severity/Magnitude + Rating of Spatial Scope of Impact + Rating of Impact Duration

Table 17: Impacts Likelihood

Frequency / duration of activity	Rating	Frequency of impact	Rating
Annually or less	1	Almost never / Impossible	1
6 monthly / temporary	2	Very seldom / highly unlikely	2
Monthly / infrequent	3	Infrequent / unlikely / seldom	3
Weekly / life of operation	4	Often / regularly / likely / possible	4
Post closure	5	Daily / highly likely / definitely	5

[3] https://cdn.slrconsulting.com/uploads/2020-10/TEPNA_Seismic_DEIR_App4_IA_Method.pdf

Note:

Total Rating of Impact Likelihood = Rating of Frequency/Duration of Activity + Rating of Impact Frequency

The definitions used in the impact assessment are given below:

- **Frequency** of activity refers to how often the proposed activity will take place.
- **Frequency** of impact refers to the frequency with which a stressor (aspect) will impact on the receptor.
- **Severity** refers to the degree of change to the receptor status in terms of the reversibility of the impact; sensitivity of receptor to stressor; duration of impact (increasing or decreasing with time); controversy potential and precedent setting; threat to environmental and health standards.
- **Spatial** scope refers to the geographical scale of the impact.
- **Duration** refers to the length of time over which the stressor will cause a change in the resource or receptor.

Table 18: Significance Rating Matrix

	Consequence (Magnitude+ Geographic extent + Duration of the Impact)														
Likelihood (Frequency of Activity + Frequency of Impact)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45
	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105
	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150

Note:

Rating of Impact Significance = Rating of Likelihood x Rating of Consequence

Table 19: Negative Impacts ratings and associated colour codes

Significance rating	Value	Colour Code	Negative Impact Management Recommendation
Very high	121-150		Propose mitigation measures
High	100-120		Propose mitigation measures
Medium high	77-99		Propose mitigation measures
Low medium	51-76		Maintain current management
Low	25-50		Maintain current management
Very low	4-24		Maintain current management

8.2. Positive Environmental and Social Impacts

8.2.1. Positive Impacts of Water and Sanitation Projects

Table 20: Water and sanitation project positive Impacts

Positive Impact	Impact Category	Impact Effects	Phase of Impact Occurrence	
			Construction	Operations
Employment Opportunities	Direct Impact	job opportunities, providing employment for local residents and contributing to economic development in the community.	√	
Skill Development	Direct Impact	Local workers involved in the construction gain skills and experience, enhancing their employability and potentially leading to long-term economic benefits	√	
Local Economic Stimulus	Direct Impact	The purchase of materials, equipment, and services for construction stimulates the local economy, supporting local businesses	√	
Community Engagement	Direct Impact	The construction phase often involves community engagement, consultation, and participation, fostering a sense of ownership and collaboration	√	
Improved Public Health	Indirect Impact	Access to clean and safe water sources, along with proper sanitation facilities, reduces the risk of waterborne diseases and contributes to overall public health.		√
Disease Prevention	Direct Impact	Adequate sanitation facilities, such as latrines and sewage systems, prevent the contamination of water sources and the spread of waterborne diseases like cholera and dysentery.		√
Reduced Mortality Rates	Direct Impact	Access to safe water and sanitation facilities is linked to lower mortality rates, particularly among children, as it helps prevent water-related illnesses.		√
Enhanced Hygiene Practices	Direct Impact	Provision of handwashing facilities and hygiene education encourages better hygiene practices, leading to improved personal and community health		√

Positive Impact	Impact Category	Impact Effects	Phase of Impact Occurrence	
			Construction	Operations
Increased Productivity	Direct Impact	Access to reliable water sources saves time spent on water collection, particularly for women and children, allowing for increased productivity and educational opportunities		√
Food Security	Direct Impact	Reliable water sources contribute to improved agricultural practices for those practicing agriculture, leading to increased food security and livelihoods for communities		√
Gender Empowerment	Direct Impact	Provision of water and sanitation facilities can empower women and girls by reducing the time and effort spent on water-related activities, allowing for more educational and economic opportunities		√
Community Resilience	Direct Impact	Water projects that focus on sustainable water management contribute to community resilience in the face of climate change and water scarcity		√
Reduced Water-Borne Pollution	Direct Impact	Proper sanitation facilities prevent the contamination of water sources, reducing waterborne pollution and protecting aquatic ecosystems.		√
Social Equity	Direct Impact	Equitable access to water and sanitation facilities promotes social inclusion and reduces disparities, fostering a sense of community well-being.		√

8.2.2. Positive Impacts of Ablution Blocks

Table 21: Ablution Block positive Impacts

Positive Impact	Impact Category	Impact Effects	Phase of Impact Occurrence	
			Construction	Operations
Community Gathering Spaces	Direct Impacts	Ablution blocks can serve as community gathering spaces, fostering social interaction and cohesion within the		√

		community		
Improved Hygiene Practices	Direct Impacts	Provision of handwashing facilities in ablution blocks promotes good hygiene practices among the community members		√
Enhanced Dignity and Privacy	Direct Impacts	Adequate ablution facilities contribute to the dignity and privacy of individuals, particularly in crowded or public spaces		√
Community Education	Indirect Impacts	Ablution blocks can serve as platforms for hygiene and sanitation education, raising awareness about the importance of cleanliness and health		√
Reduction of Open Defecation	Direct Impacts	Adequate sanitation facilities, including ablution blocks, contribute to the reduction of open defecation, improving community health and sanitation		√
Local Economic Opportunities	Indirect Impacts	Construction and maintenance of ablution blocks can create local job opportunities, contributing to the economic well-being of the community	√	√
Emergency Preparedness	Direct Impacts	Ablution blocks can serve as essential facilities during emergencies, providing access to clean water and sanitation services in times of need		√

8.2.3. Positive Impacts of the Proposed Access Roads

Table 22: Access Roads Positive Impacts

Positive Impact	Impact category	Impact Effects	Phase of Impact Occurrence	
			Construction	**Operations**
Improved Accessibility	Direct Impact	Settlement road projects enhance the connectivity of remote or underserved areas, improving accessibility for residents and facilitating the movement of goods and services		√
Economic Development	Direct Impact	Construction activities and the enhanced connectivity will lead to increased economic activities as it becomes easier for businesses to transport goods, reach markets, and engage in trade, ultimately boosting local economies	√	√

Positive Impact	Impact category	Impact Effects	Phase of Impact Occurrence	
			Construction	Operations
Increased Property Values	Direct Impact	The proposed roads is likely to positively impact property values in the surrounding areas, attracting investment and improving the overall real estate market		√
Job Creation	Direct Impact	The construction and maintenance the roads create employment opportunities, supporting local communities and contributing to poverty reduction	√	√
Social Integration	Indirect Impact	Improved accessibility fosters social integration by connecting previously isolated settlements, allowing residents to interact more easily and participate in community activities		√
Education and Healthcare Access	Direct Impact	Settlement roads facilitate better access to education and healthcare facilities, as students, healthcare workers, and patients can travel more efficiently		√
Enhanced Emergency Response	Direct Impact	The roads improve access for emergency services, reducing response times and increasing the effectiveness of disaster management and healthcare delivery		√
Quality of Life Improvement	Direct Impact	Improved roads contribute to a better quality of life for residents, making it easier to access essential services, reducing travel times, and enhancing overall well-being		√
Infrastructure Development	Direct Impact	Settlement roads often pave the way for additional infrastructure development, such as water supply, sanitation, and electricity, contributing to a more developed and resilient community		√
Community Empowerment	Direct Impact	Improved infrastructure empowers communities by providing them with the means to actively participate in economic, social, and political activities.		√
Reduced	Direct	Settlement roads reduce the isolation of		√

Positive Impact	Impact category	Impact Effects	Phase of Impact Occurrence	
			Construction	Operations
Isolation	Impact	remote communities, allowing the connection with urban centers and access a broader range of services and opportunities		

8.2.4. Positive Environmental and Social Impacts of Street Lights and Flood Lights

Table 23: Streetlights Positive Impacts

Positive Impact	Impact category	Impact Effects	Phase of Impact Occurrence	
			Construction	Operations
Reduced Crime and Increased Safety	Direct Impacts	Well-lit streets and public spaces contribute to increased safety, potentially reducing criminal activity and enhancing public security		√
Enhanced Visibility and Reduced Accidents	Direct Impacts	Adequate lighting improves visibility, reducing the likelihood of accidents and improving overall road safety for pedestrians and motorists		√
Increased Sense of Community	Direct Impacts	Well-lit public spaces foster a sense of community by providing a safe and welcoming environment for residents to gather, socialize, and participate in community events		√
Support for Nighttime Economy	Indirect Impacts	Street lights contribute to a vibrant nighttime economy by extending business hours and supporting nighttime activities in commercial areas		√
Emergency Response Improvement	Direct Impacts	Adequate lighting facilitates emergency response efforts by providing clear visibility during nighttime incidents or emergencies		√
Improved Public Health	Direct Impacts	Well-lit streets and public spaces contribute to community well-being by promoting mental health, reducing fear of crime, and enhancing overall feelings of safety		√

Enhanced Aesthetics	Indirect Impacts	lighting installations contribute to the visual appeal of public spaces, making the lit areas more attractive and creating a positive ambiance		√
Increased Property Values	Indirect Impacts	Well-lit neighborhoods and commercial areas can contribute to increased property values, attracting investment and promoting economic growth		√

8.3. Negative Environmental and Social Impacts

The section below discusses the adverse impacts anticipated from implementation of THE proposed projects. Common impacts such as those from construction activity have been lumped together so that only those specific to sub-projects are discussed separately. All civil works as proposed under KISIP investment has potential to generate impacts as listed below: -

8.3.1 Construction Phase

8.3.1.1. Air Pollution from dust

Earth moving activities will result to dust generation during clearance and construction at the identified locations. This is in addition to various concrete mixing and painting activities. This will affect the construction workforce, the neighboring households and community in general, flora and fauna in the area.

Table 23: Air Pollution Impacts Rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	5
	Spatial Scope/Geographic Extent of Impact	4
	Duration of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	5
Impact Significance Rating	**High**	104

Proposed Mitigation:

- *Use water spray systems to control dust and the active construction sites;*
- *Schedule high-dust activities during low-wind periods;*

- *Provide workers with personal protective equipment (PPE) like dust masks;*
- *Display warning signs and implement traffic control measures;*
- *Inform nearby residents and businesses about construction activities and potential dust impacts;*
- *Train construction workers on dust control measures and the use of personal protective equipment;*
- *Engage with the local community to provide information on the air quality impact challenges they are encountering and establish their mitigation measures.*

Air pollution from source emissions

Source emissions pollution during construction refers to the release of pollutants directly from construction activities and equipment. These emissions can have adverse effects on air quality, human health, and the environment. Common sources of emissions during construction include construction equipment, machinery, and materials.

Proposed Mitigation:

- *Use fuel efficient construction equipment;*
- *Install emission control technologies such as diesel particulate filters and selective catalytic reduction systems on construction equipment;*
- *Train operators on best practices for equipment operation to optimize fuel efficiency and reduce emissions;*
- *Implement regular maintenance schedules to ensure equipment operates efficiently and meets emission standards;*
- *Undertakes baseline air quality to assess particulates and gases before start of construction and;*
- *Ensure continuous air quality monitoring throughout the entire construction period.*

7.5.1.1. Noise and vibration

Noise pollution will mainly result from construction vehicles movement as well as from various machinery operations used in construction including metal grinding and welding works, excavations, blasting among other machinery operations. Excessive noise will impact on the

community residing within near and along the project areas, as well as the construction workforce.

Vibrations on the other hand would be caused by grading activities, drilling as well as blasting activities. Excessive vibration has the potential to affect the existing infrastructure (people's homes, roads, bridges), destabilize the area geological formation and structural integrity of community houses.

Table 24: Noise Pollution Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	4
	Spatial Scope/Geographic Extent of Impact	3
	Duration of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	5
Impact Significance Rating	**Medium High**	88

Proposed Mitigation

- *Use equipment that is properly fitted with noise reduction devices such as mufflers;*
- *Use equipment that have low noise emissions as stated by the manufacturers;*
- *Standard restrictions to hours of site woks;*
- *Workers should be provided with personal protective equipment;*
- *The residents will be informed ahead of the commencement of works.*
- *Encourage the adoption of low noise technology and practice for machines during construction.*
- *Construction activities should be limited to daylight hours although scheduling may require overnight operations on specific occasions;*
- *Limit operation for specific loud pieces of equipment or operations to day-time;*
- *Require contractors to prepare and implement a Vehicle & Traffic Management Plan (VTMP);*
- *Ensure continuous noise level monitoring throughout the entire construction period.*

7.5.1.2. Flooding of Storm Water due to Blocked Drainage Channels

Flooding could occur mainly due to alternation or blockage of existing drainage channels during construction. This with the changing weather patterns could lead to flooding that may lead to loss of property and life.

Table 25: Flooding Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	4
	Spatial Scope/Geographic Extent of Impact	3
	Duration of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	4
Impact Significance Rating	**Medium - High**	77

Proposed Mitigation Measures

- *Designate emergency overflow routes or areas where excess water can be safely directed during heavy rainfall that will help to prevent flooding in critical areas by providing an alternative path for excess water;*
- *Develop and implement comprehensive storm water management plans that address the entire watershed;*
- *Assess and Implement early warning systems to provide timely alerts about potential flooding that could guide on construction timings;*
- *Develop and enforce construction waste management practices to prevent improper disposal of construction debris and materials into drainage channels;*
- *Rationale: Strict enforcement discourages practices that contribute to blockages in the drainage system.*

7.5.1.3. Destruction of Water Pipes or Disruption of Water Supply, Sewer and Power Lines

Construction activities may disrupt the daily lives of community members, affecting routines and causing inconvenience.

Table 26: Facility destruction Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	4
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	2
Likelihood	Frequency/duration of activity	2
	Frequency of impact	3
Impact Significance Rating		40

Proposed Mitigation Measures

- *Conduct thorough utility mapping and surveys before construction to identify the locations of water pipes, sewer lines, and power infrastructure;*
- *Clearly mark and sign areas with underground utilities to alert construction crews and equipment operators to avoid accidental damage by ensuring that construction teams are aware of the presence of utilities;*
- *Develop and implement an emergency response plan that outlines procedures for addressing utility disruptions to ensures a prompt and coordinated response to minimize the impact of disruptions.*
- *Plan construction activities in phases to minimize the simultaneous disruption of multiple utilities. Sequential construction activities reduce the risk of widespread utility disruptions and help manage construction impacts;*
- *Provide advanced notification to residents and businesses about planned utility disruptions, including temporary water supply interruptions. This will help in management of expectations and allows residents and businesses to make necessary preparations;*
- *Engage with the local community through the SEP committee members to gather input, address concerns, and inform residents about potential disruptions.*

7.5.1.4. Vegetation loss

A number of ornamental plants and exotic trees were identified along the project areas. Site preparation by vegetation clearance and excavations exposes soils leaving them vulnerable to erosion by heavy rainfall and surface run-off.

Table 27: Vegetation loss Impacts Rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	2
Likelihood	Frequency/duration of activity	4
	Frequency of impact	5
Impact Significance Rating		45

Proposed Mitigation Measures

- *Conduct a comprehensive assessment of the existing vegetation, including species diversity, ecological value, and health to assist in developing targeted mitigation strategies;*
- *Identify and designate critical areas with high ecological value for preservation, avoiding construction in these sensitive zones including the rivers and streams located within the project areas of interest;*
- *Develop and implement a plan for revegetation or reforestation to restore vegetation in areas affected by construction. This will help to rehabilitate disturbed landscapes and recreate habitats for flora and fauna;*
- *Establish a monitoring program to track vegetation recovery and adjust mitigation strategies based on ongoing assessments.*

7.5.1.5. Surface Water Runoff

Soil exposed from site clearance and de-vegetation, Improper location of stockpiles of sand, gravel, cement, etc., at the construction site could cause fine materials to be washed away during heavy rainfall events.

Table 28: Water runoff Impacts Rating

Criteria		Rating
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	2

Likelihood	Frequency/duration of activity	2
	Frequency of impact	2
Impact Significance Rating		28

Proposed Mitigation measures

- *Schedule construction activities to avoid periods of heavy rainfall when the risk of runoff is higher;*
- *Develop and implement comprehensive storm water management plans that include erosion control measures*.

7.5.1.6. Soil Erosion and Loss

There is a risk of soil erosion during excavation/ construction works, or if inadequate measures for storm water management is not put in place. The natural drains around the project area are expected to receive eroded soil which could end up polluting the streams nearby.

Table 29: Soil erosion Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	4
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	3
Likelihood	Frequency/duration of activity	2
	Frequency of impact	3
Impact Significance Rating		40

Proposed Mitigation measures

- *Practice selective vegetation clearing where necessary;*
- *Schedule construction activities to avoid periods of heavy rainfall when the risk of runoff is higher;*
- *Cover soil stockpiles and construction materials on site and on transit to prevent wind and water erosion;*
- *Minimize the extent of grading and disturbance to natural terrain, preserving existing vegetation and soil structure.*

- *Use excavated soils for backfilling while carry away excess soil for appropriate disposal.*
- *Carry out slope protection along the steep slopes to rehabilitate areas where excavation has taken place to prevent future collapse and erosion;*
- *Re-vegetating disturbed areas once construction and demolition works are completed during construction and decommissioning phases, respectively.*

7.5.1.7. Surface and Subsurface Soil and Water Pollution

Use of construction chemicals, adhesives, sealants, and additives and other construction-related chemicals can introduce contaminants into the soil, affecting its composition and quality. Additionally, accidental spills or leaks of construction chemicals, fuels, and lubricants. Dumping or improper disposal of construction debris, concrete waste, and hazardous materials on the other hand can lead to soil pollution. Improper disposal of concrete washout water which contains alkaline substances and may be contaminated with cementitious materials, can harm aquatic environments like rivers present at the project areas.

Table 30: Surface and ground water pollution Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	4
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	3
Likelihood	Frequency/duration of activity	2
	Frequency of impact	3
Impact Significance Rating		40

Proposed Mitigation Measures

- *Store construction chemicals in designated areas with proper containment measures;*
- *Develop a spill prevention and response plan to address accidental releases of hazardous materials;*
- *Conduct soil and water sampling and testing before, during, and after construction to monitor soil quality especially at the operating sites;*
- *Conduct educational programs for construction crews on proper soil management practices and the importance of preventing soil pollution;*

- *Use designated areas for concrete washout, and provide proper containment and disposal methods. Consider using environmentally friendly concrete additives.*

7.5.1.8. Solid Waste Generation

Solid wastes will mainly emanate from the construction activities and will include excavated soil, cement storage bags and other packaging materials used during construction, spillage of oil and grease from machines used in excavation, waste from repair and maintenance of construction equipment, part demolition waste among others.

Table 31: Solid water Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	3
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	2
Likelihood	Frequency/duration of activity	4
	Frequency of impact	4
Impact Significance Rating		56

Proposed Mitigation Measures

- *Provide clearly labeled bins for source separation of different types of waste (e.g., metal, wood, concrete) to encourage recycling;*
- *Train construction workers on the importance of source separation and proper disposal practices to minimize contamination;*
- *Develop and implement a comprehensive program for the reuse and recycling of construction waste materials, including concrete, wood, metal, and other recyclables*
- *Prioritize material efficiency and waste reduction by planning construction activities to minimize excess materials and packaging;*
- *Provision of toilet facilities for use by the contractor staff and other workers during construction and operation phases respectively. Provide portable sanitary conveniences for the construction workers for control of sewage waste. A ratio of approximately 25 workers per chemical toilet should be used;*

- *Develop strategies (waste management plan) for management of specific waste streams prior to construction phase;*
- *Store hazardous wastes such as used oils and other chemicals in bunded areas away from watercourses.*

7.5.1.9. Visual Intrusion Impacts

Visual intrusion impacts during construction refer to the negative visual effects that construction activities can have on the surrounding landscape, views, and aesthetics. These impacts can affect the visual quality of the environment and may lead to concerns from the community and other stakeholders. Addressing visual intrusion is important to minimize adverse effects on the scenic and aesthetic aspects of an area. Temporary structures, construction debris, and equipment may create visual eyesores during the construction phase. On the other hand, Dust generated from construction activities can contribute to reduced air quality, affecting the clarity of views among other impacts.

Table 32: Visual Intrusion Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	5
Likelihood	Frequency/duration of activity	2
	Frequency of impact	3
Impact Significance Rating		45

Proposed Mitigation Measures

- *Deploy temporary barriers to shield construction activities from public view, especially in sensitive areas;*
- *Implement dust control measures to minimize the visual impact of airborne particles generated during construction.*

7.5.1.10. Potential Impact on Traffic/ Obstruction of Temporary Access

The potential impact on traffic and obstruction of temporary access during construction is a significant consideration. Construction activities can disrupt normal traffic flow and access

routes, leading to safety concerns and inconvenience for the locals. The potential impacts include traffic congestion, obstruction of access routes, pedestrian safety risks, emergency vehicle access etc.

Table 33: Traffic Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	2
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	1
Likelihood	Frequency/duration of activity	2
	Frequency of impact	4
Impact Significance Rating		24

Proposed Mitigation Measures

- *Develop a comprehensive traffic management plan that includes measures to minimize congestion, regulate traffic flow, and ensure safe pedestrian movement;*
- *se clear and visible signage to inform the public about construction activities, detours, and expected delays. Communicate construction schedules in advance;*
- *Schedule construction activities during off-peak hours to minimize disruption to normal commuting times;*
- *Identify and promote alternative routes for motorists to bypass construction zones, reducing congestion on primary routes;*
- *Provide safe and well-marked pedestrian walkways, ensuring that pedestrians can navigate around construction zones without compromising their safety;*
- *Engage with the local community through the SEC committee to inform them about construction plans, potential traffic impacts, and mitigation measures. Solicit feedback and address concerns;*
- *Plan construction activities in phases to minimize the extent of road closures and traffic disruptions at any given time;*
- *Coordinate with emergency services to establish clear emergency access routes and ensure that construction activities do not impede their response.*

7.5.1.11. Occupational Health and Safety Risks

Occupational health and safety impacts during construction are of paramount concern, as construction sites involve various hazards that can pose risks to workers. Addressing these impacts is crucial to ensure the well-being of construction workers and prevent accidents and injuries. These hazards include falls, struck-by hazards, caught between hazards, electrical hazards, ergonomic hazards, chemical and biological hazards, psychosocial hazards, noise and vibration etc.

Table 34: Occupational Safety Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
	Duration of Impact	3
Likelihood	Frequency/duration of activity	4
	Frequency of impact	3
Impact Significance Rating		77

Proposed Mitigation Measures

- *Provide comprehensive safety training for all workers, emphasizing hazard awareness, safe work practices, and emergency procedures.*
- *Ensure the use of appropriate PPE, such as hard hats, safety glasses, gloves, and respiratory protection.*
- *Conduct regular inspections and audits to identify and address potential hazards on the construction site.*
- *Develop and communicate emergency response plans to address potential accidents or incidents promptly.*
- *Implement health monitoring programs to track workers' exposure to hazardous substances and identify potential health issues.*
- *Design workstations and processes with ergonomic principles to minimize strain and prevent musculoskeletal disorders.*
- *Promote overall worker well-being through wellness programs and initiatives addressing both physical and mental health.*

7.5.1.12. Requirement and Use of Local Building Materials

The requirement and use of local building materials during construction can have various implications for sustainability, cost-effectiveness, and community development. Some materials may be abundant and others need to be sourced from outside the area. Locally available materials could be easy to source and thus reduce environmental footprint, more cost effective however, quality may need to be assessed.

Table 35: Construction Materials Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
	Duration of Impact	3
Likelihood	Frequency/duration of activity	4
	Frequency of impact	4
Impact Significance Rating		88

Potential Mitigation Measures

- *The construction contract should stipulate that the Contractor sources materials from an approved site;*
- *The tender documents should specify required standards and certification for procurement of all materials and appliances;*
- *The sources of all required materials should be inspected prior to acquisition to confirm that they are legitimate operations;*
- *The contractor should ensure that he sources construction materials sustainably;*
- *The contractor should ensure that the storage area for materials is good so as to avoid spoils and waste;*
- *Possibly invest in local capacity building to enhance the skills and capabilities of local craftsmen and suppliers, ensuring that they can meet project requirements;*
- *Collaborate with local industries to develop and supply materials that meet project specifications, fostering a sustainable supply chain.*

7.5.1.13. Sustainability and Climate Change Impacts

Sustainability and climate change impacts during construction are critical considerations as the construction industry significantly influences environmental and social aspects. Addressing these impacts is essential for creating resilient, eco-friendly, and socially responsible built environments. The potential impacts include greenhouse gas emissions, resource depletion, air and water pollution etc.

Table 36: Climate Change Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	4
	Spatial Scope/Geographic Extent of Impact	4
	Duration of Impact	3
Likelihood	Frequency/duration of activity	3
	Frequency of impact	3
Impact Significance Rating		66

Proposed Mitigation measures

- *Use of low emission vehicles for mobilization activities;*
- *Use generators with low emissions;*
- *Switch-off engines when not in use;*
- *Conduct regular maintenance of vehicles and equipment to minimize emissions;*
- *Disturbed areas that will no longer be developed can be revegetated with local vegetation to serve as buffer for future activities and operation and to increase local sequestering capacity for greenhouse gases;*
- *Ensure regular monitoring of possible GHGs emissions.*

7.5.1.14. Displacement Impacts

Displacement impacts during construction refer to the forced relocation or disturbance of communities, households, or individuals due to construction activities. These impacts can have significant social, economic, and psychological consequences for the affected population. Addressing displacement impacts is crucial for ensuring social equity, minimizing negative effects, and promoting sustainable development. To establish the number of people that will be

displaced, an Abbreviated Resettlement Action plan has been undertaken in detail as presented on Annex VI of this report.

Table 37: Displacement Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	4
	Spatial Scope/Geographic Extent of Impact	1
	Duration of Impact	5
Likelihood	Frequency/duration of activity	1
	Frequency of impact	2
Impact Significance Rating		30

Proposed Mitigation Measures

- *Adequate notice period to relocate business wares and structures,*
- *Minimize damages and compensate traders for damages, time and income lost*
- *Hasten the construction process to reduce period of inconvenience/length of impacts*
- *Develop comprehensive resettlement plans that outline procedures for compensation, alternative housing, and livelihood restoration*.

7.5.1.15. Immorality and Increase in Sexually Transmitted Diseases

Migration of people from different regions with diverse moral backgrounds through various workforce may lead to behavioral influences which may increase the spread of diseases such as Human Immuno-Deficiency Virus (HIV), Acquired Immune Deficiency Syndrome (AIDS) and other Sexually Transmitted Infections (STIs).

Table 38: STI diseases Impacts Rating

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	5
	Spatial Scope/Geographic Extent of Impact	4
	Duration of Impact	5
Likelihood	Frequency/duration of activity	4
	Frequency of impact	3
Impact Significance		98

Rating		

Proposed Mitigation Measures

- *Implement comprehensive sexual education programs that cover safe sex practices, STD prevention, and the importance of consensual relationships. This will promote awareness and equips individuals with the knowledge to make informed decisions about their sexual health;*
- *Ensure easy access to condoms and other forms of contraception to encourage safe sexual practices;*
- *Establish feedback mechanisms to receive input from the community about the effectiveness of prevention and education programs.*

8.3.2 Operation Phase

8.3.2.1. Air pollution

Emissions from vehicles and motorbikes using the roads on a daily basis will contribute to air pollution during operation phase of the project. The impact on air quality during repairs and maintenance (operation phase) is expected to occur.

Table 39: Air Pollution Impacts Rating during Operations

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Spatial Scope/Geographic Extent of Impact	5
	Duration of Impact	2
Likelihood	Frequency/duration of activity	3
	Frequency of impact	3
Impact Significance Rating		66

Mitigation

- Promote the use of cleaner vehicles, enforce emission standards, and implement dust control measures.
- Use of manual equipment to minimize the air quality impacts from motorized machinery.

8.3.2.1 Noise pollution

Noise emission and associated impacts during repairs and maintenance is expected to be low and will emanate from motorized equipment as well as noise from the motor vehicles on the roads.

Table 40: Noise Pollution Impacts Rating during Operations

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Spatial Scope/Geographic Extent of Impact	5
	Duration of Impact	2
Likelihood	Frequency/duration of activity	3
	Frequency of impact	3
Impact Significance Rating		66

Mitigation: use of manual equipment to minimize the noise levels impacts from motorized machinery Provide speed limits.

8.3.2.2 Possible Vandalism and Theft of Accessories

Table 41: Vandalism Impacts Rating during Operations

Criteria		Rating
Consequences	Severity/Magnitude of Impact	4
	Spatial Scope/Geographic Extent of Impact	5
	Duration of Impact	2
Likelihood	Frequency/duration of activity	3
	Frequency of impact	3
Impact Significance Rating		66

Proposed Mitigation Measures

- *Employ security personnel or community watch programs;*
- *Use tamper-resistant accessories or materials;*
- *Educate the community on the importance of infrastructure protection.*
- *Engage local authorities and law enforcement in monitoring and preventing vandalism.*

8.3.2.3 Accidents from Speeding Vehicles

Table 42: Accidents Impacts Rating during Operations

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	4
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	5
Likelihood	Frequency/duration of activity	4
	Frequency of impact	3
Impact Significance Rating		77

Proposed Mitigation measures

- *Implement speed limits and enforce traffic regulations.*
- *Install speed bumps or rumble strips.*
- *Display prominent road signs indicating speed limits.*

8.3.2.4 Loss of Reclaimed Land

Table 43: Loss of reclaimed land Impacts Rating during Operations

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	4
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	5
Likelihood	Frequency/duration of activity	4
	Frequency of impact	3
Impact Significance Rating		77

Proposed Mitigation Measures

- *Install fencing and lockable gates around water supply infrastructure.*
- *Educate the community on the importance of infrastructure protection.*
- *Engage local authorities and law enforcement in monitoring and preventing vandalism.*

8.3.2.5 Vandalism of Water Supply Infrastructure

Table 44: Vandalism Impacts Rating during Operations

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	4
	Spatial Scope/Geographic Extent of Impact	5
	Duration of Impact	2
Likelihood	Frequency/duration of activity	3
	Frequency of impact	3
Impact Significance Rating		66

Proposed Mitigation Measures

- *Install fencing and lockable gates around water supply infrastructure.*
- *Educate the community on the importance of infrastructure protection.*
- *Engage local authorities and law enforcement in monitoring and preventing vandalism.*

8.3.2.6 Hazards associated with Effluent Water from Public Watering Points

Table 45: Hazard Impacts Rating during Operations

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	5
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	2
Impact Significance Rating		55

Proposed Mitigation Measures

- *Regularly test and monitor water quality from public watering points;*
- *Install water treatment facilities if necessary;*
- *Educate the public on safe water practices.*

8.3.2.7 Possibility of Spread of Waterborne Diseases from Contaminated Piped Water

Table 46: Water Borne Diseases Impact Rating during Operations

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	5
	Spatial Scope/Geographic Extent of Impact	3
	Duration of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	2
Impact Significance Rating		60

Proposed Mitigation Measures

- *Regularly test and monitor water quality from public watering points;*
- *Install water treatment facilities if necessary;*
- *Educate the public on safe water practices.*

8.3.2.8 Disease Spread from Non-maintained Toilets

Table 47: Disease spread Impacts Rating during Operations

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	4
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	2
Impact Significance Rating		50

Proposed Mitigation measures

- *Establish a routine maintenance schedule for toilets;*
- *Provide training for community members on basic toilet maintenance;*
- *Encourage a sense of communal responsibility for maintaining public facilities.*

8.3.2.9 Foul Smell from Non-maintained Toilets

Table 48: Foul smell Impacts Rating during Operations

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	2
	Duration of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	4
Impact Significance Rating		49

Proposed Mitigation Measures

- *Ensure proper ventilation in toilet facilities to reduce odors;*
- *Implement odor control measures, such as using deodorizers or natural remedies;*
- *Regularly clean and maintain toilet facilities.*

8.3.2.10 Rodents/ garbage spillage associated with poor maintenance/management

Table 49: Poor Management Impacts Rating during Operations

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	3
	Duration of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	3
Impact Significance Rating		48

Proposed Mitigation Measures

- *Implement effective waste management practices;*
- *Provide proper waste disposal bins and educate the community on their use;*
- *Conduct regular cleaning and waste removal activities;*
- *Implement rodent control measures, such as using traps or pest control services;*
- *Educate the community on practices that discourage rodent presence.*

8.3.2.11 Destruction of roads and amenities from riots and demonstrations

Table 50: Riots Impacts Rating during Operations

Criteria		**Rating**
Consequences	Severity/Magnitude of Impact	1
	Spatial Scope/Geographic Extent of Impact	3
	Duration of Impact	4
Likelihood	Frequency/duration of activity	3
	Frequency of impact	3
Impact Significance Rating		48

Proposed Mitigation Measures

- *Conduct awareness campaigns on the importance of the infrastructure and its impact on the community.*
- *Communicate the potential consequences of destructive actions during riots and demonstrations;*
- *Familiarize project stakeholders with legal consequences for engaging in destructive actions;*
- *Collaborate with local authorities to enforce legal measures against those involved in vandalism.*

8.1. Possible General Negative Impacts

The generic impacts that would cut across all the proposed projects includes and is not limited to the impacts outlined in Table 5 below. The mitigation plan for the se impacts are presented in section 5 of this report. The construction phase would have the following impacts:

8.1.1. Construction Phase general Impacts

Table 51: Potential negative impacts during construction

Anticipated Negative Impact	Impact description
a) Air Pollution from dust	Emissions to air during construction and operation have the potential to impact sensitive receptors (residents), both within the immediate vicinity and the project area of influence. Construction activities such as utility diversions, road excavation and road resurfacing works will result in dust and particulate emissions which may be exacerbated by winds and dry weather. Dust emissions have the potential for temporary significant negative effects, particularly on road users and sensitive receptors adjacent to construction sites and compounds.
b) Noise and vibration	Noise and vibration can be a source of disturbance at sensitive receptors. Given the urban context of the proposed project, sensitive noise and vibration receptors include buildings (residential, places of worship and educational dwellings) and road users in the immediate vicinity of the existing settlements.
c) Flooding of storm water due to blocked drainage channels	Flooding could occur mainly due to alternation or blockage of existing drainage channels during construction. This with the changing weather patterns could lead to flooding that may lead to loss of property and life.
d) Water Quality	Construction activities such as diversion of utilities, road excavation and road widening have the potential to create pathways for pollutants to enter watercourses and indirectly impact on water quality. Soil compaction during construction has the potential to increase the rate of surface water runoff.
e) Displacement Impacts	This could happen when people have settled along the project reserve areas or during compulsory acquisition of land for development projects. There will be no compulsory acquisition for KISIP projects.
f) Destruction of water pipes or disruption of water supply, sewer and power lines	Construction activities may disrupt the daily lives of community members, affecting routines and causing inconvenience
g) Incidence of HIV/AIDS	Migration of people from different regions with diverse moral backgrounds through various workforce may lead to behavioral influences which may increase the spread of diseases such as Human Immuno-Deficiency Virus (HIV),
h) Vegetation loss	Clearing the vegetation would lead to soil erosion

i) Soil loss and soil pollution	Construction activities will require the excavation of existing made ground and the existing roadbed. Construction activities may create pathways between contaminants from the existing made ground and the local environment and groundwater resources which has the potential to result in significant negative effects (both temporary and permanent). In addition, construction activities may result in generation and removal of materials and solid waste generation.
j) Solid waste generation	Solid wastes will mainly emanate from the construction activities and will include excavated soil, cement storage bags and other packaging materials used during construction, spillage of oil and grease from machines used in excavation, waste from repair and maintenance of construction equipment, part demolition waste among others
k) Visual impacts	Temporary structures, construction debris, and equipment may create visual eyesores during the construction phase while Dust generated from construction activities can contribute to reduced air quality, affecting the clarity of views among other impacts
l) Potential impact on traffic/ obstruction of temporary access	Construction of the proposed infrastructure projects has the potential to impact people's day-to-day travel activities. Temporary traffic diversions, and in some instances temporary lane or road closures, may be required to undertake construction activities. Temporary traffic diversions and road closures may also reduce traffic capacity.
m) Accidental spills & leakages	Accidental spills from the construction vehicles and construction materials could occur during construction. This would lead to soil, surface and subsurface water pollution
n) Occupational Health and Safety Risks	During construction, workers would be exposed to various health and safety risks that would require control measures be taken. Opportunities for employment will also be created/available during the construction of the projects that would require hiring policies and employ management plans.
o) Building materials	Sourcing the building materials could lead to resource depletion and could sourcing from far areas could also lead to high costs and high carbon footprints
p) River water contamination	This could occur once vegetation is cleared and the soils are exposed to erosion factors. Material piles also if not properly secured would lead to downstream contamination of existing nearby springs and rivers
q) Sustainability and Climate Change Impacts	The potential impacts include greenhouse gas emissions, resource depletion, air and water pollution etc.

8.1.2. Operations Phase general Impacts

The construction phase would have the following impacts:

Table 52: Negative Impacts during Operations Phase

Anticipated Negative Impact	Impact description
a) Air Pollution	Emissions from vehicles and motorbikes using the roads on a daily basis will contribute to air pollution during operation phase of the project. The impact on air quality during repairs and maintenance (operation phase) is expected to occur
b) Noise Pollution	Noise emission and associated impacts during repairs and maintenance is expected to be low and will emanate from motorized equipment as well as noise from the motor vehicles used on the roads.
c) Possible vandalism and theft of accessories	Installed roads, lights infrastructure could be targeted for theft
d) Grievances	Grievance on the use of the infrastructure and employment
e) Incidence of HIV/AIDS	Multiple sexual interactions by employees could lead to spread of HIV/Aids
f) GBV-Sexual Exploitation and Abuse (SEA) of communities by project workers and Sexual Harassment (SH) amongst employees	This could unfold when operators ask for favors from job seekers for an employment chance. This could also unfold when employees are exploited by their leadership to retain their jobs among other reasons
g) Child Exploitation and Abuse	Employment of underaged individuals during operation stages of the project
h) Exclusion of disadvantaged and vulnerable groups e.g., VMGs, PWDs, elderly, youth, the sick, the poor, single-women, OVC etc.	Unequal employment opportunities denied to the vulnerable persons
i) Inadequate stakeholder engagement	Numerous grievances from the public regarding ownership and operations of the projects

9. ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

This chapter outlines the environmental management plan for the impacts mentioned in the preceding chapter (8). The plan entails the impacts, mitigation measures, monitoring timelines as well as the budget for implementation of the EMP.

9.1. Pre-Construction Phase

Table 51: Pre-construction phase Impacts

Project	Potential Environmental and Social Impacts	Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
Roads, Footpath and Storm water drainage Projects Lighting project	Inadequate planning and engagements	• Review and develop of all environmental and social Management plans • Communicate with the occupiers of land, stakeholders, and all relevant authorities	• Availability of environmental, social, safety and security management plans • Aligned communication with the project affected persons along the construction corridors	Contractor Proponent	Before construction	No additional cost
Roads, Footpath and Storm water drainage Projects Lighting project	Lack of public notification of commencement of work	Notify the public especially the residents on the commencement giving all relevant details	• Notifications sent to the public especially the project affected persons along and around the construction corridors	Contractor Proponent	Before construction	No additional cost
Roads, Footpath and Storm water drainage Projects Lighting project	Losses or damages related to the clearance of corridors.	Notify the public on the areas to be cleared Restrict clearance to the marked areas	• Public notifications given • Mark all areas to be cleared ang giver prior notice	Contractor Proponent	Before construction	Before construction

Project	Potential Environmental and Social Impacts	Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
Roads, Footpath and Storm water drainage Projects Lighting project	Leasing/allocation of land for Contractor facilities and workers' camp. (Implement agreements for use of land and restoration).	Evidence of leased space/land	• Lease agreements	Contractor Proponent	Before construction	Before construction

9.2. Construction Phase Environmental and Social Impacts Management and Monitoring Plan

Table 52: Construction Phase ESMMP

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
Air Pollution (dust emissions)	• Use water spray systems to control dust at the active construction sites;	• Water consumption rates for dust suppression;	Contractor Proponent RE	Monthly Throughout construction period	3,000,000
	• Schedule high-dust activities during low-wind periods	• Reduction in visible dust levels in the air	Contractor Proponent RE		N/A
	• Provide workers with personal protective equipment (PPE) like dust masks	• Compliance with PPE usage among construction workers	Contractor Proponent RE	Monthly Throughout construction period	483,000
	• Display warning signs and implement traffic control measures.	• Visibility of warning signs to motorists and pedestrians	Contractor Proponent RE	Monthly Throughout construction period	TBA
	• Train construction workers on dust control measures and the use of personal protective equipment.	• Training records indicating topic trained attendance and participation rates	Contractor's Environmental Officer	Monthly Throughout construction period	100,000
	• Engage with the local community to provide	• Feedback from the community on the	Contractor's Environmental	Monthly Throughout	70,000

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
	information on the air quality impact challenges they are encountering and establish their mitigation measures.	effectiveness of dust suppression efforts	Officer	constructio n period	
	● Inform nearby residents and businesses about construction activities and potential dust impacts	● Communication to the public regarding the ongoing works;	Contractor's Environmental Officer	Monthly Throughout constructio n period	Covered under signage costs
	● Undertake regular dust monitoring (PM_{10} and $PM_{2.5}$) throughout the construction phase.	● Air quality measurements during high-dust and low-wind periods ● Dust monitoring records.	Contractor's Environmental Officer	Daily monitoring records	300,000
Air Pollution (Source emissions)	● Use fuel efficient construction equipment; ● Train operators on best practices for equipment operation to optimize fuel efficiency and reduce emissions; ● Implement regular maintenance schedules to ensure equipment operates	● Equipment maintenance records	Contractor Proponent RE Contractor's Environmental Officer	Monthly Throughout constructio n period	N/A

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
	efficiently and meets emission standards.				
Noise and vibration	• Use equipment that is properly fitted with noise reduction devices such as mufflers;	• Installation and utilization of noise mufflers on machinery.	Contractor Proponent RE	Every time a new equipment is introduced	N/A
	• Use equipment that have low noise emissions as stated by the manufacturers;	• Documentation of equipment specifications regarding noise emissions	Contractor's Environmental Officer	Every time a new equipment is introduced	N/A
	• Workers should be provided with personal protective equipment;	• Availability and usage of personal protective equipment (PPE) among workers;	Contractor Proponent RE	Throughout construction period	Covered in PPE cost
	• The residents will be informed ahead of the commencement of works;	• Documentation of communication done with residents;	Contractor's Environmental Officer	Weekly Throughout construction period	Communication cost TBA
	• Encourage the adoption of low noise technology and practice for machines during	• Documentation of equipment specifications	Contractor Proponent RE	Throughout construction period	N/A

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
	construction.	regarding noise emissions	Contractor's Environmental Officer		
	● Limit operation for specific loud pieces of equipment or operations to daytime.	● Document indicating Adherence to designated construction hours.	Contractor's Environmental Officer	Throughout construction period	N/A
	● Require contractors to prepare and implement a Vehicle & Traffic Management Plan (VTMP).	● Existence and implementation of a Vehicle & Traffic Management Plan (VTMP)	Contractor Proponent RE Contractor's Environmental Officer	Monthly throughout construction period	TBA
	● Undertake noise monitoring at the construction sites	● Noise monitoring reports	Contractor's Environmental Officer	Daily, throughout construction period	200,000
Flooding of storm water due to blocked drainage channels	▪ Designate emergency overflow routes or areas where excess water can be safely directed during heavy rainfall that will help to prevent flooding in critical areas by	● Identification and signage of designated overflow routes ● Existence and implementation of a comprehensive storm	Contractor Proponent RE	Monthly Throughout construction period	TBA

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
	providing an alternative path for excess water; ▪ Develop and implement comprehensive storm water management plans that address the entire watershed; ▪ Assess and Implement early warning systems to provide timely alerts about potential flooding that could guide on construction timings; ▪ Develop and enforce construction waste management practices to prevent improper disposal of construction debris and materials into drainage channels.	water management plan ● Implementation and functionality of early warning systems ● Documentation of construction waste management practices ● Inspection reports indicating waste management practices			
Displacement Impacts	● Adequate notice period to relocate business wares and structures, ● Minimize damages and Compensate traders for damages, time and income lost ● Hasten the construction process to reduce period of	● Documentation of notice periods provided to affected residents and businesses; ● Compensation records for traders affected by construction; ● Progress tracking of construction activities	Contractor Proponent RE	Monthly Throughout construction period	Refer to the RAP report

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
	inconvenience/length of impacts ● Develop comprehensive resettlement plans that outline procedures for compensation, alternative housing, and livelihood restoration	against the planned schedule; ● Implementation of the Resettlement Action Plan.			
Incidence of HIV/AIDS	● Implement comprehensive sexual education programs that cover safe sex practices, STD prevention, and the importance of consensual relationships. ● Ensure easy access to condoms and other forms of contraception to encourage safe sexual practices.	● Community education programme in place with the curriculum coverage; ● Availability and accessibility of condoms and contraceptives.	Contractor Proponent RE	Quarterly Throughout construction period	4,000,000
Soil loss and soil pollution	● Practice selective vegetation clearing where necessary; ● Schedule construction activities to avoid periods of heavy rainfall when the risk of runoff is higher; ● Cover soil stockpiles and construction materials on site	● Documentation of areas subject to selective clearing ● Adherence to construction schedules that avoid periods of heavy rainfall ● Compliance with	Contractor Proponent RE Contractor's Environmental Officer	Monthly Throughout construction period	TBA

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
	and on transit to prevent wind and water erosion; ● Minimize the extent of grading and disturbance to natural terrain, preserving existing vegetation and soil structure. ● Use excavated soils for backfilling while carry away excess soil for appropriate disposal. ● Carry out slope protection along the steep slopes to rehabilitate areas where excavation has taken place to prevent future collapse and erosion.	guidelines for minimizing terrain disturbance ● Records of the use of excavated soils for backfilling and documentation of excess soil disposal practices			
Surface and sub-surface soil and water pollution	● Store construction chemicals in designated areas with proper containment measures; ● Develop a spill prevention and response plan to address accidental releases of hazardous materials; ● Conduct educational programs for construction	● Existence and use of designated areas for chemical storage ● Existence and implementation of a spill prevention and response plan ● Construction team training records on soil and water pollution ● Designated areas for	Contractor Proponent RE Contractor's Environmental Officer	Monthly Throughout construction period	N/A

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
	crews on proper soil management practices and the importance of preventing soil pollution; ● Use designated areas for concrete washout, and provide proper containment and disposal methods. Consider using environmentally friendly concrete additives.	concrete washout			
	● Conduct water monitoring during and after construction	● Water monitoring reports	Contractor Proponent RE	Quarterly throughout the constructio n period	300,000
Solid waste generation	● Provide clearly labeled bins for source separation of different types of waste (e.g., metal, wood, concrete) to encourage recycling; ● Train construction workers on the importance of source separation and proper disposal practices to minimize contamination;	● Existence of clearly labeled bins for different types of waste ● Implementation of training programs for construction workers ● Existence and implementation of a waste reuse and recycling program	Contractor Proponent RE Contractor's Environmental Officer	Monthly Throughout constructio n period	

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
	● Develop and implement a comprehensive program for the reuse and recycling of construction waste materials, including concrete, wood, metal, and other recyclables ● Prioritize material efficiency and waste reduction by planning construction activities to minimize excess materials and packaging; ● Provision of toilet facilities for use by the contractor staff and other workers during construction and operation phases respectively. Provide portable sanitary conveniences for the construction workers for control of sewage waste. A ratio of approximately 25 workers per chemical toilet should be used; ● Develop strategies (waste management plan) for management of specific waste streams prior to construction phase;	● Existence and accessibility of toilet facilities for construction and operation phases ● Existence and implementation of a waste management plan ● Documentation of storage areas for hazardous wastes.			

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
	● Store hazardous wastes such as used oils and other chemicals in bunded areas away from watercourses.				
Waste management project	● Design proper waste skips to avoid overflow ● Locate the waste management facility away from drainages and natural water sources ● Locate the waste with consideration of wind direction	● Proper design of the waste facility ● Appropriate waste facility location away from water sources and wind direction considerations	Design team	Once during design	Design costs
Visual impacts	● Deploy temporary barriers to shield construction activities from public view, especially in sensitive areas.	● Existence and effectiveness of temporary barriers deployed to shield construction activities	Proponent RE Contractor	Once Throughout construction period	TBA
	● Implement dust control measures to minimize the visual impact of airborne particles generated during construction.	● Implementation of dust control measures to minimize airborne particles during construction	Contractor's Environmental Officer	Daily during construction	Included in dust suppression cost

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
Potential impact on traffic/ obstruction of temporary access	• Develop a comprehensive traffic management plan that includes measures to minimize congestion, regulate traffic flow, and ensure safe pedestrian movement; • se clear and visible signage to inform the public about construction activities, detours, and expected delays. Communicate construction schedules in advance; • Schedule construction activities during off-peak hours to minimize disruption to normal commuting times; • Identify and promote alternative routes for motorists to bypass construction zones, reducing congestion on primary routes; • Provide safe and well-marked pedestrian walkways, ensuring that pedestrians can navigate around construction zones without compromising their safety; • Engage with the local	• Existence and implementation of a comprehensive traffic management plan • Implementation of clear and visible signage at construction sites • Adherence to construction schedules that prioritize off-peak hours • Identification and promotion of alternative routes to bypass construction zones • Existence and accessibility of safe and well-marked pedestrian walkways around construction zones • Documentation of community awareness and feedback on traffic impacts • Coordination with	Contractor Proponent RE	Weekly Throughout construction period	TBA by RE team

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
	community through the SEC committee to inform them about construction plans, potential traffic impacts, and mitigation measures. Solicit feedback and address concerns; ● Plan construction activities in phases to minimize the extent of road closures and traffic disruptions at any given time; ● Coordinate with emergency services to establish clear emergency access routes and ensure that construction activities do not impede their response.	emergency services to establish and maintain clear emergency access routes			
Occupational Health and Safety Risks	● Provide comprehensive safety training for all workers, emphasizing hazard awareness, safe work practices, and emergency procedures.	● Existence and implementation of safety training programs	Contractor Proponent RE	Regular training on onboarding of new staff Throughout constructio n period	200,000 for every 25 committee members 120,000 for Fire Risk Training to all staff annually 100,000 for First aid training to all staff Annually

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
	• Ensure the use of appropriate PPE, such as hard hats, safety glasses, gloves, and respiratory protection.	• Implementation and use of appropriate personal protective equipment (PPE)	Contractor's Safety Officer	Daily inspection and supervision reports	Included in PPE provision costs Supervision included in Safety Officer's cost
	• Conduct regular inspections and audits to identify and address potential hazards on the construction site.	• Existence and implementation of regular inspection and audit programs	Contractor's Safety Officer		100,000 paid to the safety officer monthly to monitor; 150,000 Annual External HSE Auditor
	• Develop and communicate emergency response plans to address potential accidents or incidents promptly.	• Emergency response Plan • Communication of emergency response plans through tool box talks • Incidents and accidents records	Contractor's Safety Officer	Daily	Safety Officer Cost
	• Provide safe working tools to adhere to the ergonomic principles to minimize strain and prevent musculoskeletal	• Safe working tools provided • Zero cases of ergonomic disorders during the construction	Contractor Proponent RE	Annually	Included in the medical examination costs

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
	disorders.	phase			
	• Promote overall worker well-being through wellness programs and initiatives addressing both physical and mental health.	• Existence and implementation of wellness programs addressing physical and mental health including fitness to work medical examination	Contractor	Annually	50,000
Natural resource depletion	• Construction contract should stipulate that the Contractor sources materials from an approved site; • The tender documents should specify required standards and certification for procurement of all materials and appliances; • The sources of all required materials should be inspected prior to acquisition to confirm that they are legitimate operations; • The contractor should ensure that he sources construction	• Inclusion of material sourcing requirements in the construction contract • Obtain relevant certifications and licenses at the material sourcing sites • Inclusion of required standards and certification details in tender documents • Existence and implementation of material source inspection processes	• Proponent procurement department • Contractor procurement	Monthly Throughout construction period	TBA by materials engineer

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
	materials sustainably; ● The contractor should ensure that the storage area for materials is good so as to avoid spoils and waste; ● Possibly invest in local capacity building to enhance the skills and capabilities of local craftsmen and suppliers, ensuring that they can meet project requirements; ● Collaborate with local industries to develop and supply materials that meet project specifications, fostering a sustainable supply chain.	● Documentation of sustainable sourcing practices for construction materials ● Existence and maintenance of proper storage areas for construction materials ● Existence and implementation of collaboration with local industries			
	● Obtain permits and any relevant documentation on the construction sources of water	● Sources of construction water ● Water abstraction permits where relevant ● Records on the amount of water used on a daily basis to assess resource utilization	Contractor Proponent RE	Monthly	Water for dust suppression included in dust suppression cost Construction water amount TBA by Engineering team Water abstraction permit TBA by

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
		• Water bills			Geotechnical team
Land take	Preparation of a resettlement action plan report (RAP).	• Resettlement action plan report • Action plan on the RAP report	Contractor Proponent RE	Monthly Throughout construction period	Covered in the RAP report
Grievances	Grievances shall be addressed through the GRM document developed for KISIP II	• Existence of the grievance redress mechanism document	Proponent Contractor RE	Monthly Throughout construction period	200,000
Surface water contamination	• Preventing wet concrete and cement from entering watercourse; • Stockpiles to be kept away from watercourses; • Prepare a spill contingency response plan and procure appropriate equipment for oil and • fuel spill management; • Develop a water quality monitoring programme in collaboration with relevant lead agencies; and • Procure an oil spill response kit and build capacity of staff	• Implementation of measures to prevent wet concrete and cement from entering watercourses • Documentation of stockpile locations and their distance from watercourses • Existence and implementation of a spill contingency response plan and procurement and availability of an oil spill response kit	Contractor Proponent RE	Monthly Throughout construction period	100,000 to obtain spill kits for the four project areas

Construction Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
	to respond effectively to potential oil spillages	● Existence and implementation of a spill contingency response plan			
Sustainability and Climate Change Impacts	▪ Use of low emission vehicles for mobilization activities; ▪ Use generators with low emissions; ▪ Switch-off engines when not in use; ▪ Conduct regular maintenance of vehicles and equipment to minimize emissions; ▪ Disturbed areas that will no longer be developed can be revegetated with local vegetation to serve as buffer for future activities and operation and to increase local sequestering capacity for greenhouse gases;	● Implementation of low-emission vehicles for mobilization activities ● Use of generators with low emissions for construction activities ● Adherence to guidelines for switching off engines when not in use ● Implementation of regular maintenance programs for vehicles and equipment	Contractor's Environment Officer	Monthly Throughout construction period	N/A

9.3. Operation Phase Environmental and Social Impacts Management and Monitoring Plan

Table 53: Operations Phase ESMMP

Operations Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
Air pollution	Promote the use of cleaner vehicles, enforce emission standards, and implement dust control measures; Use of manual equipment to minimize the air quality impacts from motorized machinery	• Regular emission testing for motorized machinery •	• Operating Government institution • NEMA • Ministry of transport	Annually during the project life	To be determined during operations phase
Noise pollution	Use of manual equipment to minimize the noise levels impacts from motorized machinery during repairs if any	• Feedback from community	Operating agency	During repairs	To be determined during operations phase
Possible vandalism and theft of accessories	▪ Employ security personnel or community watch programs; ▪ Educate the community on the importance of infrastructure protection. ▪ Engage local authorities and law enforcement in monitoring and preventing vandalism	• Presence of security personnel or community watch programs at vulnerable sites • Establish an incident reporting system for immediate response to vandalism or theft • Community feedback on awareness and	Community leadership Local leadership Relevant department in the County Government	Project life	To be determined during operations phase

Operations Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
		reported incidents of attempted vandalism ● Incidents reported and actions taken by law enforcement in response to vandalism			
Accidents from speeding vehicles	▪ Implement speed limits and enforce traffic regulations. ▪ Install speed bumps or rumble strips. ▪ Display prominent road signs indicating speed limits.	● Number of reported speeding incidents and actions taken; ● Inspection reports confirming the installation of speed bumps or rumble strips ● Inspection reports confirming the installation of speed bumps or rumble strips	Community leadership Local leadership Relevant department in the County Government	Project life	To be determined during operations phase
Vandalism of water supply infrastructure	▪ Educate the community on the importance of infrastructure protection. ▪ Engage local authorities and law enforcement in monitoring and preventing vandalism ▪ Promptly repair any damage and strengthen preventive	● Verification of the presence and condition of fencing and lockable gates ● Number of community education programs conducted	Community leadership Local leadership Relevant department in	Project life	To be determined during operations phase

Operations Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
	maintenance.	• Incidents reported to and actions taken by law enforcement in response to vandalism • Records of reported damages and timelines for repairs	the County Government		
Hazards associated with effluent water from public watering points	▪ Regularly test and monitor water quality from public watering points; ▪ Install water treatment facilities if necessary; ▪ Educate the public on safe water practices.	• Frequency of water quality testing and the results of water quality tests, indicating compliance with safety standards • Records of any incidents requiring treatment and their resolutions • Community feedback on awareness and reported incidents related to water safety practices	Community leadership Local leadership Relevant department in the County Government	Project life	To be determined during operations phase
Possibility of spread of waterborne diseases from contaminated piped water	• Regularly test and monitor water quality from public watering points for waterborne pathogens	• Frequency of water quality testing specifically for waterborne	Community leadership Local	Project life	To be determined during operations

Operations Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
	● Install water treatment facilities if necessary; ● Educate the public on safe water practices ● Implement water treatment measures as needed.	pathogens ● Documentation of water treatment measures implemented based on testing results	leadership Relevant department in the County Government		phase
Disease spread from non-maintained toilets	▪ Establish a routine maintenance schedule for toilets; ▪ Provide training for community members on basic toilet maintenance; ▪ Encourage a sense of communal responsibility for maintaining public facilities. ▪ Conduct public health awareness campaigns on the importance of toilet hygiene.	● Documentation of the maintenance schedule ● Number of training sessions conducted for community members ● Number of public health awareness campaigns conducted	Community leadership Local leadership Relevant department in the County Government	Project life	To be determined during operations phase
Foul smell from non-maintained toilets	▪ Ensure proper ventilation in toilet facilities to reduce odors; ▪ Implement odor control measures, such as using deodorizers or natural remedies; ▪ Regularly clean and maintain toilet facilities.	● Verification of the presence and effectiveness of ventilation systems ● Verification of the presence and effectiveness of odor control measures ● Documentation of the maintenance	Community leadership Local leadership Relevant department in the County Government	Project life	To be determined during operations phase

Operations Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
		schedule ● Response time to reported cleanliness issues ● Community feedback on the cleanliness and maintenance of toilet facilities.			
Rodents/ garbage spillage associated with poor maintenance/management	▪ Implement effective waste management practices; ▪ Provide proper waste disposal bins and educate the community on their use; ▪ Conduct regular cleaning and waste removal activities; ▪ Implement rodent control measures, such as using traps or pest control services; ▪ Educate the community on practices that discourage rodent presence.	● Verification of the presence and effectiveness of waste management practices ● Verification of the presence and condition of waste disposal bins ● Documentation of the cleaning and waste removal schedule ● Verification of the presence and effectiveness of rodent control measures	Community leadership Local leadership Relevant department in the County Government	Project life	To be determined during operations phase
Destruction of roads and amenities from riots and	▪ Conduct awareness campaigns on the importance of the	● Documentation of sessions or materials	Community leadership	Project life	To be determined

Operations Phase Environmental Impact	Proposed Mitigation Measure	Monitoring Indicator	Responsibility	Monitoring Frequency	Estimated Cost (KES)
demonstrations	infrastructure and its impact on the community. ▪ Communicate the potential consequences of destructive actions during riots and demonstrations; ▪ Familiarize project stakeholders with legal consequences for engaging in destructive actions; ▪ Collaborate with local authorities to enforce legal measures against those involved in vandalism.	used to familiarize stakeholders with legal consequences ● Community feedback on their understanding of the infrastructure's importance and impact ● Records of collaboration with local authorities for legal enforcement ● Number of legal actions taken against individuals involved in vandalism	Local leadership Relevant department in the County Government		during operations phase

9.4. Decommissioning Phase EMMP

Decommissioning refers to the formal process of bringing to an end. As the final phase in the project cycle, decommissioning may present positive environmental opportunities associated with the return of the land for alternative use and the cessation of impacts associated with operational activities. However, depending on the nature of the operational activity, the need to manage risks and potential residual impacts may remain well after operations have ceased.

This EMP should be treated as a guiding document that will be employed in the initial stages of the decommissioning. Detailed procedures will be developed with the cause of decommissioning in mind by competent persons and agencies. *Table 53* below presents the EMP of the decommissioning phase for the proposed project.

Table 54: Environmental Management Plan for the decommissioning Phase

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Monitoring Means	Time Frame	Cost (Ksh)
Demolition waste management					
Demolition waste	Use of an integrated solid waste management system i.e. through a hierarchy of options: Source reduction; Recycling; Reuse; Sanitary land filling.	Project Manager and Contractor	Inspection and Observation	One-off	**TBA**
	All structures and partitions that will not be used for other purposes must be removed and recycled/reused as far as possible.	Project Manager and Contractor	Inspection and Observation	One-off	**TBA**
	All foundations must be removed and recycled, reused or disposed of at a licensed disposal site.	Project Manager and Contractor	Inspection and Observation	One-off	**TBA**
	Where recycling/reuse is not possible, the materials should be taken to a licensed waste disposal site.	Project Manager and Contractor	Inspection and Observation	One-off	**TBA**
Rehabilitation of project site					
Vegetation	Implement an appropriate re-vegetation programme to restore the site to its original status.	Project Manager and Contractor	Observation	One-off	**TBA**

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Monitoring Means	Time Frame	Cost (Ksh)
disturbance	Consider use of indigenous plant species in re-vegetation.	Project Manager and Contractor	Observation	One-off	**TBA**
Minimization of occupational health and safety impacts					
Increased occupational health and safety risks	Adherence to the Occupational Health and Safety Rules and Regulations stipulated in the Occupational Safety and Health Act, 2007.	Health and Safety Manager	Inspection, Meeting and Observation	Throughout decommissioning period	**TBA**
	Provision of appropriate personal protective equipment as well as ensuring a safe and healthy environment for demolition workers.	Proponent	Inspection and Observation	Throughout decommissioning period	**TBA**
	Mitigate demolition workers accidents by enforcing adherence to safety procedures and preparing contingency plan for accident response.	Health and Safety Manager	Meeting and Observation	Throughout decommissioning period	**TBA**
Minimization of demolition noise and vibration					
Noise and vibration	Sensitise demolition vehicle drivers and machinery operators to switch off engines of vehicles or machinery not being used.	Project Manager and Contractor	Meeting	Throughout demolition period	**TBA**
	Sensitise demolition drivers to avoid gunning of vehicle engines or hooting especially when passing through sensitive areas such as churches, offices, hospitals, residential houses and schools.	Project Manager and Contractor	Meeting	Throughout demolition period	**TBA**
	Ensure that demolition machinery is kept in good condition to reduce noise and vibration generation.	Project Manager and Contractor	Inspection	Throughout demolition period	**TBA**
	Ensure that all generators and other equipment used are insulated or placed in enclosures.	Project Manager and Contractor	Inspection	Throughout demolition period	**TBA**
	The noisy construction works will be planned to be during the day.	Project Manager and all site foreman	Observation	Throughout demolition period	**TBA**

10. CONCLUSION AND RECOMMENDATIONS

10.1 Conclusion

The implementation of the proposed project will generate both positive and negative impacts. This report presents appropriate mitigation measures based on the findings and particularly the opinions expressed by key stakeholders as well as the community during community engagements. A comprehensive environmental management plan against identified potential adverse impacts is presented in Chapter Nine (9) of this report and will see the negative impacts further decrease significantly. The study further concluded that the project will be of immense benefit to the community as a whole.

10.2 Recommendations

On the basis of the conclusion above, we recommend that the proponent be allowed to proceed with the proposed identified projects, and in addition the proponent should comply with the approved designs and implement ESMP developed by the consultant. The mitigation measures proposed in this report should be included in the tender contract and tender documents so that the contractor who will be selected for the project will be bound to implement them.

11. REFERENCES

Environmental Coordination and Management Act (Air Quality) Regulations, 2014.

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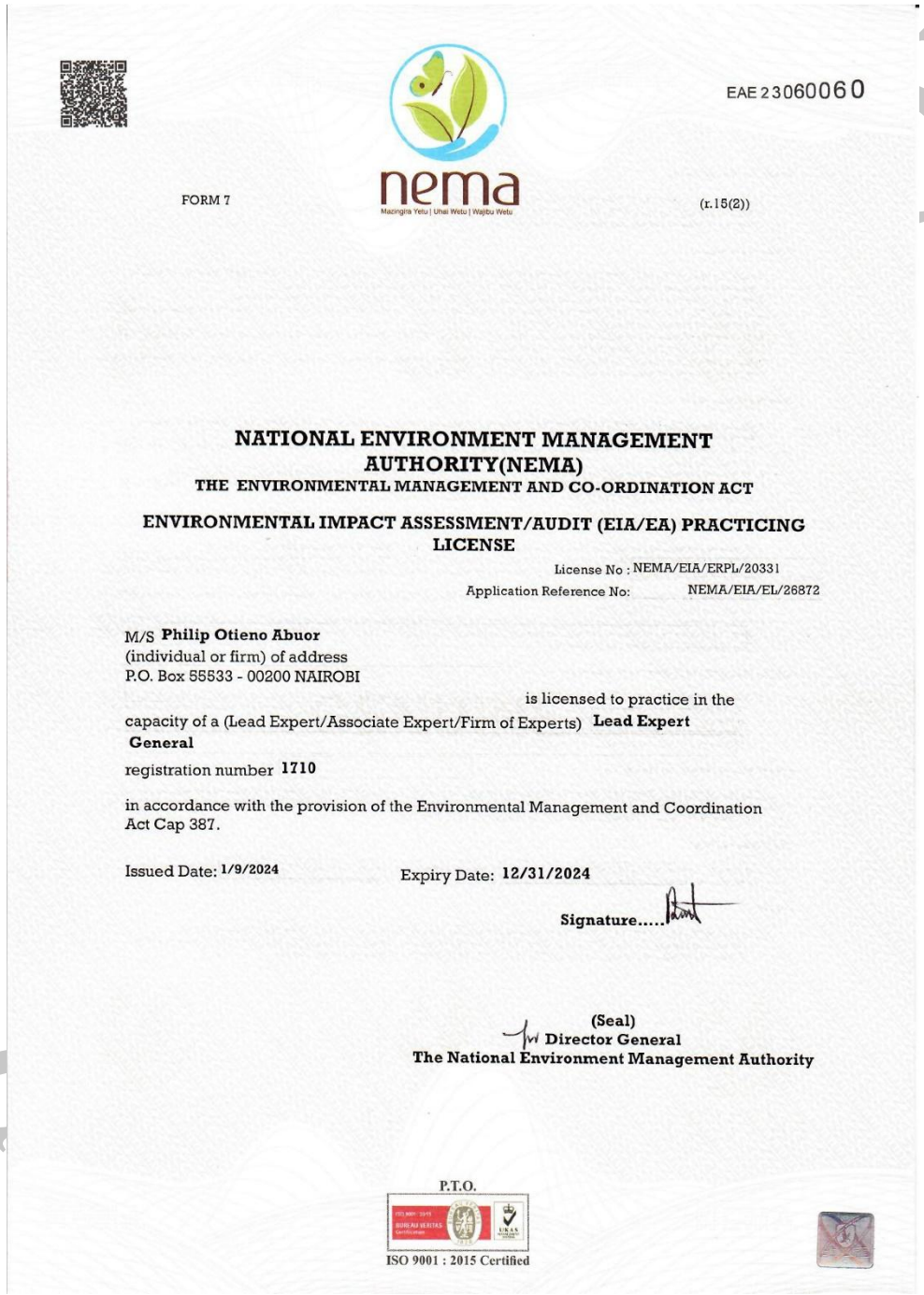
KISIP II Project Appraisal Document of 2020

Kenya Informal Settlements Improvement Project II KISIP II Social Management Plan

(SMP) November 2019

12. APPENDICES

Appendix I: Expert NEMA Licenses



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FORM 7 (r.15(2))

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE

License No : NEMA/EIA/ERPL/20331

Application Reference No: NEMA/EIA/EL/26872

M/S **Philip Otieno Abuor**
(individual or firm) of address
P.O. Box 55533 - 00200 NAIROBI

is licensed to practice in the capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert General**

registration number **1710**

in accordance with the provision of the Environmental Management and Coordination Act Cap 387.

Issued Date: **1/9/2024** Expiry Date: **12/31/2024**

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001 : 2015 Certified

13. ANNEXES

ANNEX I: Baseline Assessment reports

a) Water Quality

b) Noise Monitoring

c) Air Quality Report

ANNEX II: Bill of Quantities

ANNEX III: Land Ownership Document

ANNEX IV: Abbreviated RAP Report

ANNEX V: Social Screening Checklist

ANNEX VI: Environmental Screening Checklist

ANNEX VII: Key Stakeholder Feedback Forms